SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[*The* MINING JOURNAL *is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.*]

No. 2236.—VOL. XLVIII. LONDON, SATURDAY, JUNE 29, 1878. PRICE (WITH THE JOURNAL) SIXPENCE. PER ANNUM, BY POST, £1 4s.

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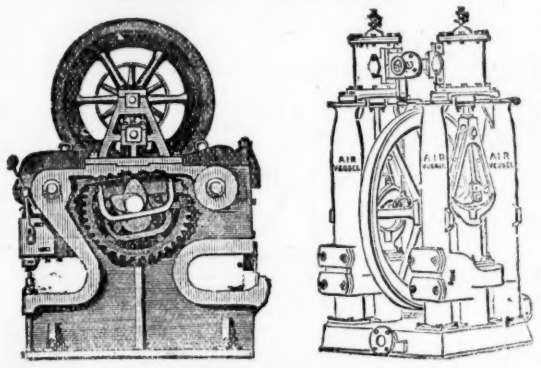

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PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES; STEAM CAPSTANS; ORE CRUSHERS; BOILERS and PITWORK of various sizes and descriptions; and all kinds of MATERIALS required for MINING PURPOSES.

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Alloy, No, II., for pinions, ornamental castings, steem fittings, &c.	£120	per ton
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The prices of castings vary according to the pattern, the quantity required, and the alloy used.

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DARK and PALE OILS for MACHINERY, RAILWAY, and MINING PURPOSES, from TWO SHILLINGS per gallon, and upwards.

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PARIS, BRONZE MEDAL, 1867.

ORDER OF THE CROWN OF PRUSSIA.

FALMOUTH, SILVER MEDAL, 1867.

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the Geographical Congress, Paris, 1875—M. Favre, Contractor, having exhibited the McKean Drill alone as the MODEL BORING MACHINE for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

THE McKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecutive weeks, ending February 7, was 24·90, 27·60, 24·80, 26·10, 28·30, 27·10, 28·40, 28·70 metres. Total advance of south heading during January was 121·30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tunnel, the McKean Rock Drill continued to work until the pressure was reduced to one-half atmosphere (7½ lbs.), showing almost the entire motive force to be available for the blow against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these Machines for the SEVERN TUNNEL; the LONDON AND NORTH-WESTERN RAILWAY for the FESTINIOG TUNNEL: and the BRITISH GOVERNMENT for several Public Works. A considerable number of Mining Companies are now using them. Shafts and Galleries are driven at from three to six times the speed of hand labour, according to the size and number of machines employed, and with important saving in cost. The ratio of advantage over hand labour is greatest where the rock is hardest.

These Machines possess many advantages, which give them a value unapproached by any other system of Boring Machine.

THE McKEAN ROCK DRILL IS ATTAINING GENERAL USE THROUGHOUT THE WORLD FOR MINING, TUNNELLING, QUARRYING, AND SUB-MARINE BORING.

The McKEAN ROCK DRILLS are the most powerful—the most portable—the most durable—the most compact—of the best mechanical device. They contain the fewest parts—have no weak parts—act without SHOCK upon any of the operating parts—work with a lower pressure than any other Rock Drill—may be worked at a higher pressure than any other—may be run with safety to FIFTEEN HUNDRED STROKES PER MINUTE—do not require a mechanic to work them—are the smallest, shortest, and lightest of all machines—will give the longest feed without change of tool—work with long or short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or open work. Their working parts are best protected against grit and accidents. The various methods of mounting them are the most efficient.

N.B.—Correspondents should state particulars as to character of work in hand in writing us for information, on receipt of which a special definite answer, with reference to our full illustrated catalogue, will be sent.

PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL, IRON, AND FLEXIBLE TUBING.

The McKean Drill may be seen in operation daily in London.

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For Cash, or on Deferred Payments, or Hire.

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ALBERT HILL, DARLINGTON.

DUNN'S ROCK DRILL,

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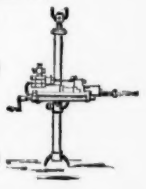
AIR COMPRESSORS,

FOR DRIVING BED ROCK TUNNELS, SINKING SHAFTS, AND PERFORMING OPEN FIELD OPERATIONS,

IS THE

CHEAPEST, SIMPLEST, STRONGEST, & MOST EFFECTIVE DRILL IN THE WORLD.



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PATENT SELF-ACTING MINERAL DRESSING MACHINE COMPANY

(LIMITED).

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IMPORTANT NOTICE TO MINE PROPRIETORS.

MR. GEORGE GREEN, ENGINEER, ABERYSTWITH, SUPPLIES MACHINES under the above Company's Patents for DRESSING all METALLIC ORES. Dressing-floors having these Machines possess the following advantages:—

1.—THEY ARE CHEAPER THAN ANY OTHER KIND IN FIRST OUTLAY.

2.—ONLY ABOUT ONE-FOURTH OF THE SPACE USUALLY OCCUPIED BY DRESSING-FLOORS IS REQUIRED.

3.—FROM 60 TO 70 PER CENT. OF THE LABOUR IN DRESSING, AND FROM 5 TO 10 PER CENT. OF ORE OTHERWISE LOST, IS SAVED.

4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN FOR MARKET AT ONE OPERATION.

They have been supplied to some of the principal mines in the United Kingdom and abroad—viz.,

The Greenside Mines, Patterdale, Cumberland; London Lead Company's Mines Darlington, Colberry, Nanthead, and Bollyhope; the Stonecroft and Greyside Mines, Hexham, Northumberland; Wanlockhead Mines, Abington, Scotland (the Duke of Buccleuch's); Bewick Partners, Haydon Bridge; the Old Darren, Esgairmwyn, and Ystumtuen Mines, in Cardiganshire; Mr. Beaumont's W.B. Mines, Darlington; also Mr. Sewell, for Argentiferous Copper Mines, Peru; the Bratsberg Copper Mines, Norway, and Mines in Italy, Germany, United States of America, and Australia, from all of whom certificates of the complete efficiency of the system can be had.

WASTE HEAPS, consisting of refuse chats and skimpings of a former washing, containing a mixture of lead, blende, and sulphur, DRESSED TO A PROFIT.

Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The yearly profit on our Nanthead waste heaps amounted last year to £600, besides the machinery being occupied for some months in dressing ore-stuff from the mines. Of course, if it had been wholly engaged in dressing wastes our returns would have been greater; but it is giving us every satisfaction, and bringing the waste heaps into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines, Wanlockhead, Abington, N.B., writing on 20th March, 1876, says—"I have much pleasure in stating that a full and superior set of your Ore Dressing Machinery has been at work at these mines for fully a month, and each day as the moving parts become smoother, and those in charge understand the working of the machinery better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply, and satisfactorily than by any other method."

Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines, says—"Your machinery saves fully one-half on old wages, and vastly more on the wages we have now to pay. Over and above the saving in cost is the saving in ore, which is a A much short of 10 per cent."

GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The separation which they make is complete."

Mr. MONTAGUE BEALE says—"It will separate ore, however close the mechanical mixture, in such a way as no other machines can do."

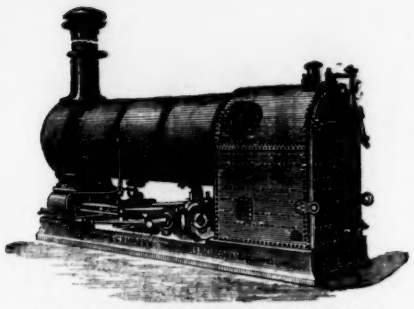
Mr. C. DODSWORTH says—"It is the very best for the purpose, and will do for any kind of metallic ores—the very thing so long needed for dressing-floors."

Drawings, specifications, and estimates will be forwarded on application to—

GEORGE GREEN, M.E., ABERYSTWITH SOUTH WALES.

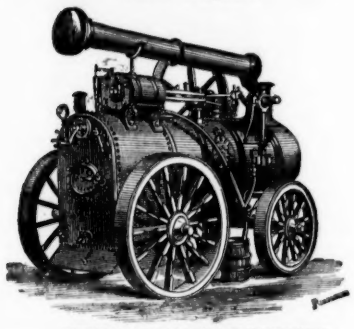
ROBEY & CO., ENGINEERS, LINCOLN,

SOLE MANUFACTURERS OF THE



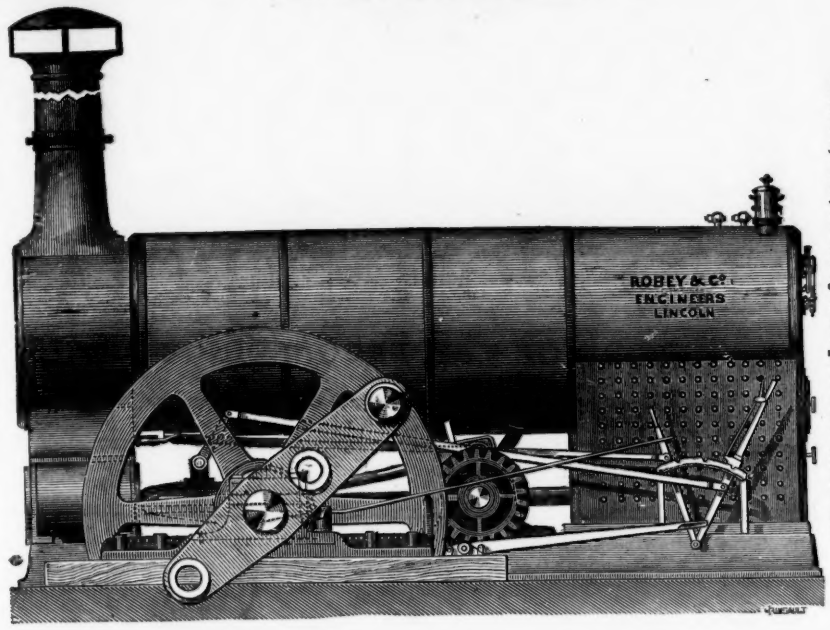
THE PATENT ROBEY FIXED ENGINE AND LOCOMOTIVE BOILER COMBINED,
4 to 50-horse power.

VERTICAL STATIONARY STEAM ENGINE AND PATENT BOILER COMBINED,
2 to 12 horse power.



SUPERIOR PORTABLE ENGINES,
4 to 50-horse power.

No Expensive Brick Buildings or High Chimney required.



Boiler can be supplied with special Fire-box for Burning Wood, Sawdust, Turf, and every description of inferior Fuel.

PATENT IMPROVED ROBEY MINING ENGINE

OF ALL SIZES, FROM 4 TO 50-HORSE POWER.

Some of the advantages of this New Engine are as follows:—
SMALL FIRST COST. SAVING OF TIME AND EXPENSE IN ERECTING. EASE, SAFETY, AND ECONOMY IN WORKING. GREAT SAVING IN FUEL.

This New Engine is free from all the objections that can be urged against using the Semi-Portable Engine for permanent work, because it possesses the rigidity and durability of the Horizontal Engine, and at the same time retains the advantages of the Semi-Portable in saving time and expense in fixing.

THE PATENT ROBEY FIXED ENGINE

(Also above illustrated) is admirably adapted for driving Rolling Mills, Saw Mills, Brick Machinery, Pumping Machinery, and all descriptions of Fixed Machinery.

ENGINES UP TO 200 EFFECTIVE HORSE-POWER ALWAYS IN PROGRESS.

Prices and full particulars of all the Machinery here Illustrated on upplication to the Sole Manufacturers,

ROBEY & CO.,
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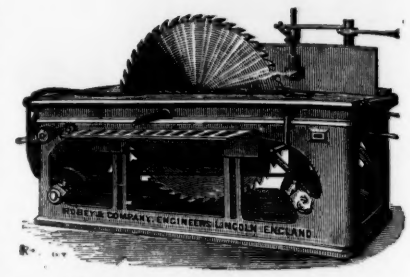
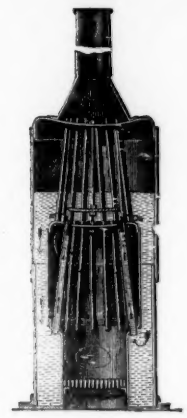
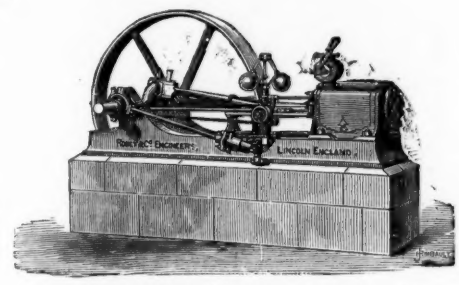
London Office: 117, Cannon Street, London, E.C.



SELF-ACTING CIRCULAR SAW BENCH.



PATENT VERTICAL BOILERS,
2 to 12 horse power.



IMPROVED HORIZONTAL FIXED STEAM ENGINE,
4 to 60-horse power.

MECHANICAL VENTILATION OF MINES.

THE UNION ENGINEERING COMPANY (C. SCHIELE AND CO.) undertake the Construction and Erection of their Colliery Ventilation Fans, of all sizes up to the largest required quantities of air. The leading features of their system are now generally known. Some of the specialities are: The absence of necessity for costly erections in masonry and brickwork: the small space required for the Machines, and the moderate first cost of the whole.

As the Fans are in a great measure self-contained, the necessary seats and connection with Pit are of a simple and inexpensive character. They can be arranged to be placed below ground when required, and also to work on Drawing Shafts. Certain sizes are often used to assist in Furnaces, with good effect.

[Estimates and further information will be prepared on receipt of the necessary particulars].

FOR SINKING PURPOSES, and also for places where small quantities of air are needed for Ventilating purposes, a Special Fan is made, in various sizes, with small engine combined, complete, arranged for both forcing and exhausting air.

NOISELESS BLOWING FANS, for Smithy Fires, and other purposes.

TURBINE WATER-WHEELS, specially designed and adapted for use in Coal Mines, for high falls of water, for the purpose of developing water power, where it is available, for use in hauling, pumping, and other works.

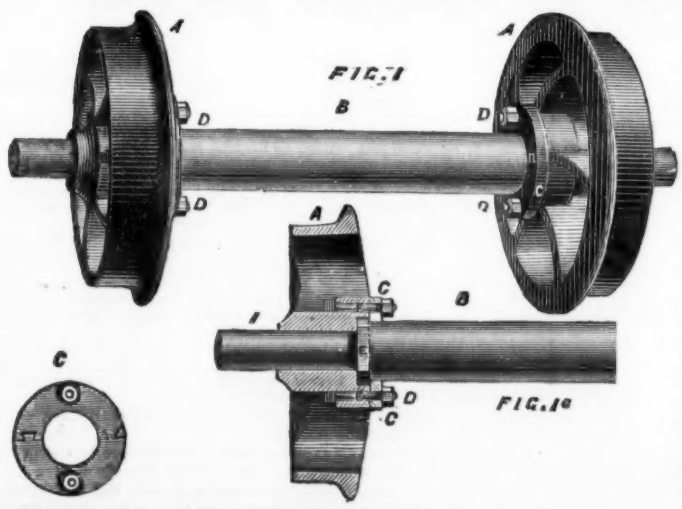
The Firm, having had an experience of nearly twenty-five years exclusively in the above Special Departments of Engineering, are prepared to advise on any matter affecting the application of Fans or Water Power in Collieries or elsewhere.

COAL-CUTTING MACHINERY, WINDING, HAULING, AND OTHER DESCRIPTIONS OF STEAM-ENGINES.

THE UNION ENGINEERING COMPANY (C. SCHIELE & CO.),
PNEUMATIC AND HYDRAULIC ENGINEERS,
(SOLE PROPRIETORS AND MAKERS OF SCHIELE'S LATEST PATENTS),
2, CLARENCE BUILDINGS, BOOTH STREET, MANCHESTER.

JOSEPH FENTON & SONS,
MANUFACTURERS OF
CAST STEEL AND FILES,
AND
CRUCIBLE CAST STEEL CASTINGS,
Sykes Works, Eyre-st. & Bridge-st., Sheffield. London Office: 118, Cannon-st., E.C.

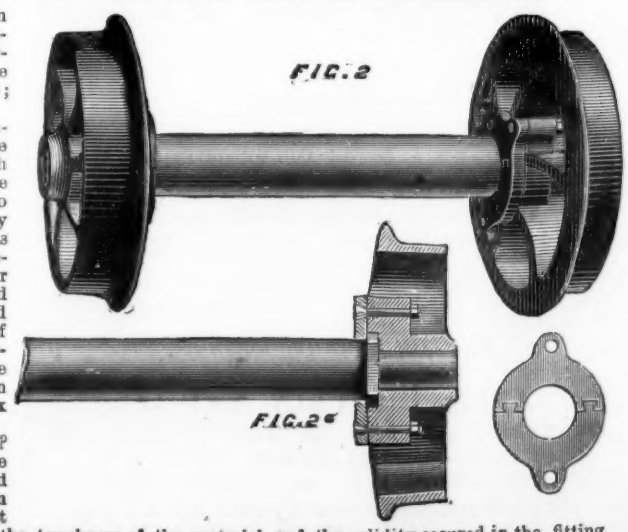
A New Patent Method of Fitting up Wheels and Axles.



Figs. 1 and 1a show a longitudinal view and plan of a pair of corf wheels and axles fitted up for outside bearings, and Figs. 2 and 2a for inside bearings. A A, are the wheels; B, is the axle; C C, the washers; D D, the bolts; E, the collar on axle B; and F, the recessed boss in the wheel.

The wheel is cast with a recessed boss in the inside, made to any shape, corresponding in shape and depth with a collar formed on the axle, which is forged of solid steel; the axle is secured into the recess partly by being sufficiently tightly fitted to require driving home with a hammer, and partly by the washer. Around the axle adjoining the boss is fixed the washer, made in two parts and dovetailed, so as to allow of being fixed after the collar has been forged on the axle. The washer is secured to the boss by bolts and nuts, both in outside and inside bearings; in the case of inside, by means of lugs cast on the boss, and the washer made of corresponding shape; the washer is made of crucible cast steel. The only tool required for fitting is an ordinary spanner for outside bearings, and a box spanner for inside bearings.

Now what are the advantages of this method? You secure a simple way of fitting—it can be done by anyone who has seen it—the only tool required being a spanner; the wheels can be detached from or secured to the axle in a few minutes. The next advantage is the perfect solidity attained, the wheel and axle practically becoming as one piece. The durability results from the toughness of the material, and the solidity secured in the fitting. Another thing is the wheels do not need to be put in the fire to detach them, as is the case in ordinary wheels. (N.B.—Our wheels cannot be injured by being heated and plunged into cold water. which wouldrender other steel wheels perfectly brittle as glass.) Saving in fuel and wages is evident—no skilled labour being required to refit wheels in case of a strained axle. By adopting this system colliery owners may save hundreds of pounds sterling yearly.



Original Correspondence.

MINING IN QUEENSLAND.

SIR,—The exports from the colony for the year 1877 were as follows:—

ANTIMONY.—Ore	Tons	111	Value £	1,776
COAL.—To New South Wales		70	£ 45	
South Australia		448	289	
Tasmania		492	436	
New Zealand		200	100	
Hongkong		3,695	2,345	
Calcutta		1,192	760	
Ceylon		700	400	
Mauritius		105	65	
Shanghai		1,765	1,020	
China		133	87	
United S. America		384	230	
Total	9184 tons, of the value of		£	5,777
COPPER.—Ore to U. Kingdom...Cwts.		80	£ 50	
New South Wales		702	1,686	
Smelted to U. Kingdom.		8,782	33,053	
New South Wales		29,621	132,548	
Total	1959¼ tons, of the value of		£	167,337
GOLD.—Dust to N. S. Wales..Ozs.		335 452	£ 1,252,036	
Bars to ditto		44,528	158,707	
Dust to Hongkong		666	2,528	
Dust to China		49,458	197,832	
Total	430,104 ozs., of the value of		£	1,611,103
TIN.—Stream to N. S. Wales..Cwts.		63,346	£ 122,702	
Smelted to U. Kingdom.		458	1,459	
Smelted to N. S. Wales..		2,898	9,271	
Total	3335 tons, valued at		£	133,432

The gross total value of our metals and minerals amounting to close on two millions in the year.

The above tin exported is 60 tons less than the quantity forwarded by rail *via* Warwick, as shown in my last month's return; the figures should correspond, but the 60 tons may be in some ship's bottom, or in some store; it proves the figures pretty nearly correct, however.

The gold shows a slight increase over the previous year.

The copper shows, unfortunately, a very considerable falling off, owing to the winding-up and sale of our two most important mines, but I have no fear of this metal decreasing. Our copper mines already discovered are numerous and very rich, and so long as speculators and company promoters keep away from them they are bound to ultimately go ahead.

The export of antimony ore is stationary; an unlimited quantity discovered, but the mines are unfortunately in the hands of capitalists and locked up.

Coal has taken a strong lead, without any accommodation whatever, as yet, the export has increased 400 per cent., and it is sent to almost every market in the southern hemisphere. So soon as the Government extends the railway to deep water, so that coal can be exported freely, cheaply, and without handling, the export of this mineral will assume large proportions. The coal we are at present exporting is got alongside the river bank, and carried by lighters containing 40 to 120 tons each to the ship 40 to 60 miles away; it is put on board the ship by baskets, and as the nature of that particular coal is very brittle your readers can imagine what state it must be in before it reaches its ultimate destination. Yet the quality is so good that all the ventures have so far paid. All our better qualities of coal are near the railway line inland, and have not as yet been exported, as the cartage from the railway to the ship is too heavy. When the Government of this colony will open their eyes to their folly and extend their railway to the river bank, so as to allow our raw material—such as timber and coal—to be shipped at a cheap rate is beyond my ken, but the sooner they do so the sooner the coal trade will assume the proportions it should do at present.—*Brisbane, April* 17. —— RESIDENT.

GOLD MINING IN BRAZIL—GONGO SOCO.

"They anticipate, though they cannot promise, success; but they can and do hopefully promise that no efforts shall be spared on their parts to bring back the Imperial Mining Association to its former brilliant condition of unrivalled prosperity."—*Winchester House, August* 10, 1852.

SIR,—Such were the concluding words of the report of the directors to the proprietors of the Imperial Brazilian Mining Association upon their assumption of the management of its affairs at that date. Observing that some attempt is now being made with an idea of re-establishing mining at Gongo Soco, I thought it might be interesting to your readers to learn something of its past history as a sort of guide to the chances of success a new company may have in prosecuting a mining enterprise upon the site abandoned by the Imperial Brazilian Mining Association after its great success and large experience. It will be seen by the subjoined table that the produce was highest in 1832, being 4201 lbs. 2 ozs., from which period there was a falling off, more or less, every year till abandoned by the Association in September, 1857; the produce for the nine months of that year being only 26 lbs. From 1852 every effort was made to meet the working expenses. Explorations upon a very extended scale were carried on by means of the very large slave force belonging to the Association till the mines became like a rabbit warren, and since then, on the purchase of the place by the Rossa Grande Company, efforts have been equally unsuccessful to produce gold in anything like paying quantities. The question of the Ouro Fino water, without which Gongo cannot be worked, is already occupying the proprietors, who hope to make any company working at Gongo pay pretty smartly for it. As in all old jacotinga mines a little gold will always be found in the debris and old workings, but is it fair to invite the public to take up and invest in a mine because of this? At present a few natives are working at Gongo, and obtain from such places a little gold; this may pay a Brazilian working for himself, having no expenses, for with a capini rancho, a little roça for his Indian corn, his pig, fowls, and a pepper-tree at his door, he is well provided for, and all else he wants is a pair of trousers, a shirt, and a rug, and equipped with a batea he is all complete; and from his half oitava of gold per day can find enough to satisfy his padre, pay for absolution, and provide esmolas for Nossa Senhora and his favourite saints. But compare this sort of thing to an English company having to invest in the purchase of property, with miles of watercourses to make or renew, and keep in repair, expensive machinery to bring out from England and erect, involving a large staff of British mechanics at high wages—a superintendent, with his 800*l.* or 1000*l.* a year, with allowances: book-keepers, cashier, storekeepers, fitters, &c., in Brazil, and Mr. Chairman and board of directors, with Mr. Secretary and staff of clerks in England, all to be paid before the shareholder can be thought of—and all this put in motion to carry out the words quoted at the head of this letter, not for the first time, but after entire failure of the then directors, who were in a much better position than any company of the present day can be to realise a profit. We see from the almost continuous and sure decrease in the table that the gentlemen then directors indulged in false hopes and expectations, and an attempt made since then has failed to reverse their non-success. What ground is there, therefore, for bringing again before the public an abandoned mine like Gongo Soco? Do the promoters hope that the decadence of the Gongo Mine, the failures of the Anglo-Brazilian, General Brazilian, Sao Vicente, East del Rey, the Brazilian Company, and also of the Gaia Mine of the St. John del Rey Company, where the then superintendent of that company had all the advantages that could be derived from their unlimited resources, and yet utterly failed, are forgotten? Have not the English public had enough of working old mines in Brazil?

At the present day the great increase in the price of provisions, the scarcity of free labour, the happy decrease of slavery, with the continuous emigration of the able-bodied from the outlying to districts where railways are in construction, and much higher wages obtained than gold mining will afford, greatly increase the difficulties of obtaining and the cost of maintaining an efficient native force; and as to slaves, to get them in any large numbers is an impossibility, and without them gold mining cannot be carried on even under favourable circumstances with profit. Free labourers have no idea of regular work, but suit themselves when to come and when to stay away.

The duty of 4 per cent. upon the gross gold extracted, of which notice has been given in the Gazette that it will be levied in July next, and which will very seriously affect what mines there are in Minas Geraes, also conduces to point out that this is a most inopportune period to introduce any scheme to carry on gold mining in this province. The directors of the Imperial Mining Association say, in the report above referred to, "That it is the intention of the directors to carry on a strict search for proper working sites on Gongo Soco simultaneously with pushing on workings already remuneratively in action."

With the abandonment of the mine in 1857, after five years of such trial, we must conclude that not only the workings remunerative in 1852 had ceased to continue to be so, but unfortunately in spite of all the prospecting with so large a force during that period no other remunerative sites were found. VIGILANS.

Minas Geraes, Brazil, May 10.

GOLD PRODUCE OF GONGO SOCO FROM 1826 TO SEPTEMBER, 1857, INCLUSIVE.

Year.	Gold—lbs.	ozs.	Year.	Gold—lbs.	ozs.	Year.	Gold—lbs.	ozs.
1826	552	11	1838	982	4	1849	157	1
1827	2010	9	1839	1373	8	1850	109	4
1828	1062	0	1840	1010	8	1851	105	5
1829	4190	8	1841	911	2	1852	107	4
1830	3049	11	1842	984	6	1853	129	2
1831	3031	6	1843	575	11	1854	92	4
1832	4201	2	1844	576	3	1855	69	5
1833	2987	8	1845	245	2	1856	78	7
1834	1652	10	1846	294	3	1857	26	0
1835	990	9	1847	159	0	Abandoned September,		
1836	999	0	1848	129	4	1857.		
1837	1391	6						

THE GOLD MINES OF BRAZIL.

SIR,—In referring to the jacotinga mines of Brazil in a previous letter I stated that in my opinion gold would be found at a much greater depth than hitherto, and that the time was not far distant when the problem will be successfully solved. In making that statement I had several mines in view, but one will suffice either to establish my theory or prove me to be in the wrong. I refer to the Pitanque Mine, which is now being explored under the able management of Thomas Treloar, jun. In selecting the Pitanque I do so because it is the oldest jacotinga mine I am acquainted with in Brazil. The Pitanque Mine was started in about the year 1770, and has been working almost continually ever since. The Brazilian proprietors found 80 small lines of gold, which they have followed down as far below water level as their knowledge of mining would admit. The present proprietors on commencing operations took the "bull by the horns," so to speak, by going down into a deep valley some distance from the mine, and driving an adit in such a manner as to unwater the old mines, and in miner-like fashion explore the runs of gold which have passed beyond the reach of the Brazilians. This adit, which has hitherto been rather expensive, has already been driven (according to Mr. Treloar's last report) 110 fms., which is good work considering the difficult nature of the ground. I shall watch the progress of this adit with a considerable degree of interest, because if the lines of gold are found at this level as rich as they were at a greater elevation it will prove my theory to be correct, and may, perhaps, be the means of inducing the owners of the San Miguel and Brucutu, which are in the same neighbourhood, to explore their mines in a similar manner. In speaking of the Brucutu Mine I may mention that in a conversation I had recently with the gentleman who last laid out a scheme for the development of that property he informed me "the Brucutu formation was identical in every respect with that at the Gongo, and that if it was properly explored it would yield splendid profits." He said it is well authenticated that the Correge do Brucutu yielded 11,000 oits. of gold in the last 3 fms. sunk, and it was reluctantly left by the Brazilians when they could do no more. This run of gold could be opened successfully only by an adit, which would cost about 20,000*l.*, and would drain the line for about 50 fathoms. After the ground is properly drained the line can be taken out at 5*l.* per fathom—so that, provided the line holds down, about 80,000*l* worth of gold can be taken out at a cost of a little over 20,000*l.* But the principal feature of the Brucutu Mine is its prospective value, inasmuch as the adit above referred to would be driven almost the entire distance in auriferous jacotinga, in which small shoots of gold have already been found at the surface; but, owing to its great altitude, is inaccessible to water, and is, therefore, beyond the reach of the non-enterprising Brazilians.

While speaking of the jacotinga mines of Brazil I would call the attention of all who are interested in the matter to the fact that up to the present time every facility has been offered to those who are ever on the watch for an opportunity of stealing the precious metal, and according to general report fully 25 per cent. of the gold taken out of the jacotinga mines in Brazil is purloined by the workpeople. Startling as this statement may appear, it does not lack confirmation. St. Hilaire, in his Voyage au Bresil, which was written after his return in 1817 (p. 271, vol. I.) writes:—"The proprietors raised 550,000*l.* worth of gold, and one-fourth in addition may be allowed for thefts, which are exceedingly common." And again, in the same page, he writes—"Notwithstanding the vigilance of those interested the robberies by workmen are so considerable that three-quarters of the gold which circulates in the vendas and taverns is stolen from the mines." And again, in p. 971, vol. I., he writes—"It appears the employees and slaves thieved continually in those mines. To recover a part of what was stolen the proprietors had established on the mountains vendas, which were kept on their own account, and where the negroes brought a portion of what they had stolen. Certain of being able to steal again they imitated the prodigality of their masters, and wasted the fruit of their pilferings." And Capt. T. Treloar, as late as 1870, writes—"I have been informed on good authority in one year gold to the extent of 128 contos (about 13,000*l*) was stolen from one mine alone, and purchased by one man." And Mr. Dawson, the managing director, when he visited the Don Pedro in 1872, was shown a splendid sample of rough gold, reported to have been stolen from the Don Pedro Mine, and sold to a person in the City of Marianna. Thus, it appears to me that the stealing of gold whenever an opportunity occurs has become an established custom; and it is, therefore, the duty of every company to exercise the utmost vigilance in trying to eradicate a system which is so detrimental to the success of the most promising concerns. In the face of those startling facts it is almost surprising that any of the Brazilian companies ever paid dividends, and the fact of their having done so is in no way due to the manner in which the mines have hitherto been conducted, which to most practical men is both primitive and extravagant. The reason the Brazilian mines have paid such splendid dividends is owing entirely to the unexampled richness of the runs of gold and the lodes. Notwithstanding all the drawbacks to which I have referred I doubt if there is another country in the world mined by English capitalists which in the aggregate has paid so well as the gold mines of Minas Geraes, in Brazil; and I am considerably under the mark when I say that for every 1*l.* spent by our capitalists in that country 2*l.* has been returned.

The only mines that are being worked by English companies in the province of Minas Geraes are the Don Pedro, which has paid in dividends over 220,000*l.*; the Pitanque, which I expect will pay some time in 1879; the Pari, which, in addition to erecting an expensive lot of machinery, is paying about 15 per cent. on the paid-up capital, with a fair prospect of doubling their dividends at an early date. The other mine at work is the celebrated Morro Velho, which requires no comment, because when a mine pays such regular and large dividends the shareholders are contented, and seldom go out of their way to enquire whether or not they are getting all the profits that the extreme richness of the mine warrants. And yet to outsiders it has always been a matter of surprise that the St. John del Rey Company have lost 3 oits. of gold per ton (over $6) without piling the tailings for the purpose of being operated on by some person who in this scientific age may discover a process by which the 3 oits. per ton which has hitherto been lost may be extracted with comparative ease. The loss of 3 oits. per ton may appear trifling to those who do not care to enquire into the matter; but according to the average output of the Morro Velho Mine the loss of gold annually given as 3 oits. is upwards of 100,000*l.* sterling, and I have no doubt that the loss since the formation of the company must be over 3 000.000*l.* Such a loss per ton must appear strange to companies like the celebrated Sierra Buttes, who pay such good dividends out of $6 ore. Nevertheless, there are very few mines that have paid like the dear old Morro Velho. And when I say the company have paid in dividends over 1,300,000*l.*, and have a reserve fund of about 50,000*l*, it ought to open the eyes of the public to the extreme richness of the locality. "To him that hath shall be given" is certainly verified in the case of the St. John del Rey Company in their purchase of the Cuiaba, and the gentleman who went out and effected the purchase must certainly have had his weather eye open. I know the property well, and I believe it is destined at some time to be equal to the St. John del Rey, and may possibly pay larger dividends.

Although all the mines worked by English capitalists in Brazil have not proved a success, there are very few that have not been well selected, The question then will very naturally be asked, why any of the companies have failed? The failures have arisen principally from two causes—incompetent and extravagant management, and the neglect of the companies in failing to carry out the objects for which they were first started. For example, a mine is selected in the best locality, previous records prove that the ancients raised large quantities of gold from the lodes, and when the mine was in its greatest prosperity it caved in, or was flooded, at any rate from some cause over which they had no control it was lost to the Brazilian proprietors. A person recommending such a concern to an English company would carefully work out his calculations in order to arrive at the probable expense and best method of reopening the mine, his estimate of the amount necessary to make the undertaking a success is (say) 100,000*l.*, but after they have spent 40,000*l.* in pushing on towards the desired point the company breaks up, and as a natural consequence the money which they have spent is entirely lost, and much odium unjustly cast upon the person who recommended the purchase of the property, whereas if the company had preserved with the work as at first laid out in all probability before the 100,000*l.* had all been expended the company would have been reaping the fruits of their perseverance, and instead of odium being cast on the management there would have been rejoicing in which all connected with the company would have participated. This may be further illustrated in the case of the celebrated St. John del Rey Mine, which was set on fire in 1867.

The whole mine collapsed, and the rich run of ore was lost to the company. After getting out an experienced surveyor from England it was decided to try and reopen the mine by sinking two perpendicular shafts, so as to recover the lost lodes at a depth of about 200 fathoms, which they did in 1873. I remember that whilst those shafts were being sunk numerous reports were freely circulated condemning the undertaking. Some predicted that they would never reach the lode; others said it would not pay again, even if they did succeed in reaching it—in fact, the reports condemnatory of the scheme were legion. Now, had the company have listened to any of those reports they might have thrown up the entire concern in disgust, but fortunately they placed implicit confidence in the persons whom they employed, and pressed steadily on to the desired point with a perseverance which won the admiration of all lovers of legitimate mining, and what is still better they have reopened a mine which pays 40 per cent. per annum on their capital, and which has a prospective value second to none in the world. Reports say (indeed, I know) that there are scores of mines in the province of Minas Geras, if opened in the same manner as the St. John del Rey, would pay an equal amount of interest on the capital expended in their development, and I have very little doubt but that Brazil is destined to be the great gold-producing country of the future.

Truro, June 26. —— A CONSTANT READER.

EUREKA, NEVADA, CORRESPONDENCE.

THE RICHMOND, &C.

SIR,—There is something inexplicably strange regarding the silence of the Journal in relation to the last three communications which I mailed it. That they, at least the two subsequent ones, despite transcontinental mail irregularities, have journeyed in safety I cannot disbelieve, but if they *did* arrive safely I am no less puzzled to solve the problem why they have not been published the same as have been *all* my letters of the past three or four years.

Of the two last mentioned, one was written in reply to the caustic criticisms of that ingenious gentleman who, on a recent occasion, took me to task in a lengthy effusion over the initials "J. H. R." for having in a prior letter penned some complimentary notices of the managing director of the Richmond. Whoever this gentleman is, who for his own wise purposes conceals his identity behind the sheltering initials aforesaid, though I have good grounds for believing him a large shareholder, I have now no disposition to open, *de novo*, old issues, or to open a second controversial tilt with him. It would at this juncture do no good, and would, if I gave loose reins either to my Faber or to my humour, only serve to engender an acerbity of feeling which I would much rather prevent than foment. This I deem the most desirable course in view of my having, in the letter aforementioned and which has not yet seen the light of your columns, while in a not very angelic frame of mind, paid him my regards for having had the temerity to impugn my motives and cast doubt upon what I had written. But though he has ingeniously sought to distort my meaning and make it appear that I was the recipient of Mr. Probert's bounty and favouritism, I willingly grant him the absolution which I think he sadly stands in need of, but with the understanding that he shall not again wander from the straight and narrow pathway usually travelled by uncrooked Faberdriners.

Should my reply to his letter ever turn up, or become resurrected from the accumulated waste of your capacious basket, into which receptacle I am persuaded it was carelessly flung, not by yourself, but doubtless by that traditional Mephistophelian imp who keeps watch over your typographical department, and plays the deuce generally, it will, without I am mistaken, help to remove the scales from "J. H. R.'s" eyes, and allow him to both see and consider things differently to what he had stated them. I am still of opinion that those two letters will yet be found, if not in your sanctum then quietly pigeon-holed, as I presume many such documents are, in some one of the mismanaged branches of Uncle Sam's postal department, which abound between this altitudinous region and the crested waves of the Atlantic. But it is just possible that, after all, they be at this moment indulging in a sort of Rip Van Winkle nap in one of Her Britannic Majesty's methodically governed offices. If the latter conjecture should prove true, then I owe both your d—l and the hard worked geniuses who furiously fling Uncle Sam's mail bags about an apology for having even momentarily doubted the fidelity of their actions.

Although I have had some suspicions of a not very complimentary nature in relation to the non-publication of those letters, I must and do hold the proprietors of your paper guiltless of any complicity tending to prevent their publication. To make so grave a charge would be contrary to my convictions, and manifestly unjust to a Journal whose columns have always been open to me, and which I have also always found strictly impartial, unprejudiced, and independent, as all journals of its type and character ought to be. I have, of course, as is reasonable, some feeling in this matter, and I would be less than human did I not utter a complaint. I have from day to day waited hoping that they would ultimately appear, particularly the former, in vindication of the ingenious aspersions of "J. H. R.," whom, for the reasons already given, I shall for the nonce leave to pursue the even, or uneven as it may be, tenor of his way. My main object in writing just now is to institute some enquiries regarding them, and to show both yourself and my friends and the public that my silence was not caused by the fear of crossing lances with so intellectual an opponent as my friend of the triple initials.

Henceforth I shall address the Journal regularly in regard to the mining interests of this and other sections of the State. Our camp is now a large and important one, and since its mining operations

are no longer conducted on the Lilipatian principle in vogue in early pioneer times, when all was an uphill struggle, but on a scale and magnitude befitting the giant strength she possesses, I shall in future devote a portion of my letters to such a pourtrayal of its existing and projected enterprises as I hope will prove acceptable to your readers.—*Eureka, Nevada, May* 20. J. D. POWER.

[The letters referred to have never reached us, or they certainly would have been noticed, if not published.]

AN EXAMINATION INTO THE POSITION AND PROSPECTS OF CERTAIN MINES, No. IX.—COLORADO.

SIR,—The physical features of the State of Colorado render it one of the most wonderful countries in the world. It has an area of 104,500 square miles, and a population of about 140,000. From its situation it is called the keystone of the Rocky Mountains. Its vast plains, mighty canyons, and high towering peaks are said to be awe inspiring. Deep down, sometimes 6000 ft., the rivers have cut their way through the rocks. No sloping valleys, but straight walls of stratified rock, 200 and 300 ft. apart, bound the rivers, and the foam-covered torrents as seen from above look like silver threads. Age after age, while the great land tracts of the world were ocean beds, these rivers must have rolled their waters to the seas. It is in regions like these that the rich silver mines of the world have been discovered; those of Peru, for example, are situated in high and desolate parts, which would never have been inhabited but for the great treasures which lie there. Legends have told of the riches of the "Rockies," which were half believed and half laughed at. It has, however, been practically demonstrated that the ores, both gold and silver, of this particular territory (Colorado) are the richest in the world, and the specimens shown at the Paris Exhibition in 1867 were admitted to be the finest ever produced. Specimens of black and brittle sulphurets from the Terrible Mine; a part of the property of this company have yielded as much as 68 and 75 per cent. pure silver. The character, then, of Colorado for the production of rich ores is established. Every day facts concerning it are adding to the character. Colorado stands the third in rank among American States as a producer of gold and silver, and ere long it may be found to be the first. The great advantage it has over other States lies in its multitude of lodes; already over 60,000 have been discovered, and probably as many more will yet be found.

Developments of the mines are not perfect, but when fully opened and explored at greater depths bonanza mines equal to any in the world may possibly be discovered. There is evidence of immense wealth, as shown in the Pelican and Dives Mines, which have returned about 1,000,000*l.* worth of silver. These mines are at Sherman Mountain, about one mile from Brown Mountain, where the cluster of the United Company's mines are situated. It is only within the past few years that Colorado has been brought before the British public as a rich mineral district, and before long a greater share of attention will be claimed for it as it pours into the world's lap the wealth which has been held with an iron-like grip in its rocks during the ages. From 1859, when the first return of $200,000 was made by a few pioneers, up to 1877 the total product of gold and silver amounted to about 14,000,000*l.* It is clear, then, that Colorado with such results must grow in importance in America and in England. For a considerable time its mines were looked upon with suspicion, but with the introduction of railways into the State in 1870 a new era began, and silver mining only fairly commenced at that period, and yet in 1874 of the gold and silver bullion returned a sixtieth part was silver. This is not to be wondered at when we consider that the silver lodes count ten to one of those of gold. Silver mining to-day is in its infancy in Colorado, and there appears to be no limit to the argentiferous wealth of the State.

In 1870 the Colorado Terrible Mine was introduced on the London market, with a capital of 125,000*l.*, in 25,000 shares of 5*l.* each; 21,000 only were issued, and dividends amounting to 14,175*l.* have been paid on them. As will be seen on reference to the surface plan (which, by the courtesy of Mr. Andrews, the secretary, I have been enabled to reproduce for the benefit of your readers), the company possessed at that time a very small proportion of the property owned to-day. The vein was said to be the richest continuous vein in Colorado. For years the company was engaged in litigation with the owners of adjoining mines, but in 1877 Mr. Andrews proceeded to the mine, and, having authority to arrange the settlement of all disputes, he very satisfactorily accomplished his mission. Arrangements were made on a sound basis, and the company thereby gained possession of 28 other properties, so that in all there are now 29 setts having proved lodes. The company was reconstituted with a capital of 305,000*l.*, in 5*l.* shares, and registered as "The Colorado United Mining Company (Limited)." Instead of a property 1100 ft. in extent the present company has a total of 58,000 ft., or a run in the aggregate on the various lodes of (say) ten miles. It is my firm belief that neither the shareholders nor the mining public have a just appreciation of the extent and value of these properties. An enumeration of the lodes may not be here out of place:—

	Linear feet.		Linear feet.
Terrible	800	Champion	1400
ditto East	300	Columbus	3000
Silver Ore	1400	W. H. Brown	3000
Gun Boat	1400	Argentine	3000
Elephant	1500	Thunderbolt	3000
John Brown	700	Investigator	3000
Old Missouri	1600	Pluto	3000
Manmouth	800	Benton	1400
U. S. Coin	1400	Red Gauntlet	3000
Glasgow	700	Johnson	3000
Tycoon	3000	Georgetown	1500
Tuscarora	3000	Terrible West Extension	1500
Treasury	3000	Chelsea Beach	1500
Terrific	1100		
Oneida	3000	Total feet	58,000
Last Chance	3000		

It will be seen that none of them has a greater length than 3000 ft.; this is owing to the restrictive mining laws of Colorado. It is not now possible to locate more than 1400 ft., but properties can be increased by purchase, as in the case of this company. The extent of ground being limited, amalgamation is acknowledged to be the best way of successfully developing the mines of the State, and this plan is being adopted by the owners of other of the rich mines in the neighbourhood of Georgetown. It is far wiser to adopt a course which mutually benefits those concerned than allowing lawyers to prey on both parties. The United Mines, as before stated, are situated on the Brown Mountain; the lodes are nearly parallel, but several hundred feet one above another on the rugged mountain side, which is about 10,000 ft. above sea level. The veins are all productive, and before they came into the possession of this company good returns were made, but they have only been worked at shallow depths, and for the most part imperfectly. The Brown lode, which ranks with the Terrible in its yield of silver, was worked only at a depth of 200 ft.; up to 1871, when the works shut down, it returned about 75,000*l.* A tunnel is now being run to cut this lode, In the lowest stope above the tunnel level a body of ore was cut 2 ft. wide. A fair average sample yielded 142 ozs. of silver to the ton; the last report, speaking of this part, says the first-class ores produce 200 ozs., and the second-class ores 75 to 100 ozs. of silver to the ton. Under date May 27 the agent wrote—"Both Mr. Hamill and I agree that, judging from the dips of the Brown, Chelsea Beach, Mammoth, U.S. Coin, Old Missouri, and other lodes on the Brown Mountain, they must all unite in depth, and we expect when we do strike the lode in the tunnel to have a very large vein." Later intelligence, received on Tuesday, fully explains the cause of delay in cutting this lode in the tunnel.

It may be mentioned here that the lodes of this district have an almost vertical dip. Too much importance can hardly be attached to this point of development. The chances of cutting this large vein are very great. The opinion of Mr. Hamill on this is of great weight, as he has had much experience amongst mines in the neighbourhood. Not long ago he was the manager of the Pelican and Dives Mines, to which reference has been made. Should the lodes unite in depth then this company will have a veritable bonanza, or king lode. But while much interest attends the running of Silver Ore tunnel there are other important points which deserve to be carefully watched. Of the Oneida Mine the agent wrote on May 18 that "there were 2 feet of mineral at the breast of the level, and this will doubtless prove to be one of the most valuable lodes belonging to the United Company." In the drift, west of Union tunnel, a discovery was reported by letter dated May 27. The ore was estimated to yield 285 ounces of silver to the ton. It was intended to run the tunnel in 100 feet, so that "this stope will be the largest one yet opened in the Terrible Mine." A letter dated June 8 states that "this stope has opened out better than I expected, and you know how high my expectations were for a big mineral here; it simply looks splendid." At the present moment the operations in the Terrible Mine proper are attracting the greatest attention. This part of the property has been most efficiently opened up, and the developments now are assuming great proportions, and much importance attaches to them. The extent of this mine was 800 feet. There are three shafts sunk on the mine—the discovery on the east, the engine-shaft in about the centre of the sett, and silver ore shaft on the west. The east and west shafts were the extreme points, but now the new ground extends 1600 feet west of silver ore shaft; the value of this new ground will be seen further on.

The hoisting-engine is fixed in the fourth level; the ores are then run through the main tunnel, the short tunnel shown on the right hand side of the plan, and thence to the tramway, which is laid to the dressing works. The 8th level, 450 ft. from surface, is the lowest point of the Terrible Mine; the level is in from the engine-shaft about 240 ft., and is 260 ft. from the silver ore shaft. Advices received on June 11 stated that "this level had been driven for the last 50 ft. in a good streak of ore; and, as we have splendid mineral on the bottom of the drift in the 7th level for the whole of this distance, it makes it now a certainty that we have a magnificent block 80 ft. in height and 310 ft. in length of stoping ground between these two levels." These reserves have been valued at 200,000*l.* On June 15 advices stated that "about 4 in. of mineral, almost solid brittle silver, had been cut in the 8th level, a fair sample of which assayed 1800 ozs. of silver per ton. This does not surprise me, as I felt certain from the dip of the lode in the 7th level that we should cut into good ore in the 8th level." A letter received this week (see report) says "the Terrible Mine is looking very well, particularly so in the 8th level, where some of the ore assays 8700 ozs. per ton, and a specimen went as high as 14,200 ozs. of silver per ton." I should have stated before that the drift west of Union Tunnel is on the Terrible lode, and they are stoping west to raise to the 6th level. As the Terrible Mine is opening up so rich in the west it will be seen how valuable the mine will become when the westerly ground is further developed.

The various departments are progressing very satisfactorily. There are no debenture debts hanging over the mine, and it is expected that a dividend will be declared in October.

Since this property has again come into notice there are, of course, the usual detractive statements made against foreign mines. Investors will do well to consider the reasons why. Foreign mines when properly managed pay better than any other mining investments, and I maintain that it is only mines producing the precious metals that can be expected in these times to liberally repay the capitalist for his outlay. It would be impossible for me to fully discuss this here, but thinking minds will perceive that mining for the baser metals has become so universal and the supplies everywhere are so abundant that competition must ever cut prices down to the lowest possible figures. Monopoly in metals is dead, and there is nothing to conserve prices, but everything to the contrary. True, there may be spasmodic advances in prices, but advanced and steady ones cannot be looked for until the trade of the whole world—not England only—improves, and that will be when we take to remodelling the continent of Africa. In the meantime mines which produce the precious metals must become more popular, for gold and silver are little affected by the considerations surrounding other metals.

WILLIAM GABBOTT,
8, *Drapers' Gardens, E.C., June* 26. Stock and Share Dealer.

CANADIAN MINING NOTES—No. III.

Kingston, a city of about 10,000 inhabitants, situated at the foot of Lake Ontario, and the head of the Lake of the Thousand Islands, is one of the oldest—and, perhaps, one of the most picturesque—cities in Canada. Time will not permit us to describe the beautiful sweep which Lake Ontario here takes, having obtained for herself sentinels like Wolfe Island and Garden Island, rests her weary waves in the harbour of Kingston. Towards the east old St. Lawrence may be seen, his head full of islands, clustering together till Brockville is reached, 60 miles distant. Kingston of to-day, however, is not the Kingston of yore, when the Parliament buildings where there, when the whole traffic of the lakes changed their cargoes to smaller vessels, and when an English regiment or two resided there. Yet it is destined to become a fine large city if the wealth in minerals which Nature has deposited in the back country be developed.

We shall describe one of the best lead mines in Canada, and one well worthy the attention of all mineral men, whether capitalists or those who take delight in geological formations from scientific reasons. Out on the road we travel along in a good stage, which the enterprise of Mr. Stockwell, the manager of the mines, has placed on the road between Kingston and the Frontenac Lead Mines. The road is a good macadamised one till we come to Lougborough Bridge, after which we have a country road which is very bad. The 16 mills, however, between the city and the mines is reached in about 2½ hours. The approach to the mine has been beautified by the spreading of the calc-spar taken from the lode, and the road looks as if formed of beautiful crust sugar. Large quantities of this calc-spar still remain at the mouth of the mine, and if the country people knew what was for their benefit they would have gone to work and spread it over the road.

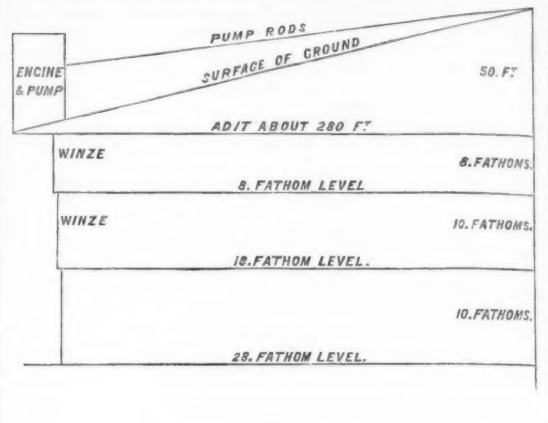
This mine was first discovered about ten or twelve years ago. It was obtained by Mr. Carruthers, of Kingston, Mr. Machan, and others, and work was done on it forthwith. However, they commenced putting up buildings, steam-engine, crusher, &c., before they had taken out enough ore, and, consequently, when they had got down 80 ft. they had to stop for want of funds. I enclose a description of the mine as it stands at present. The adit to the surface was put in by the original company, and they went down about 20 ft. below the adit. The present company took possession of the property about the year 1873, and have made great progress since then. It has been worked on true mining principles, the idea being to develope the ground, and then by means of stoping to take out large quantities of the ore. The lead or lode is about 15 ft. wide on the surface, and the galena is scattered throughout the gangue in the lode. It is an enormous lode, and as they get down they find the gangue decreasing, and the amount of lead increasing.

Last year a contract was made with the American Diamond Drill Company to sink and take out from the shaft 100 ft. deep. They put in the holes to a depth of 100 ft. and filled them with sand as long ago as last August, but were unable to make headway in blasting out the rock on account of its porous nature and the want of experience in mining; they did some work also in the levels. The contract with the Americans is now done away way, and the Frontenac Company have just let out a contract to sink 7 fms., which will take them to the 38 fm. level, at the rate of $200 per fathom. It is more than probable that the holes put in will be utilised, although many will be of no value. From the mouth of the adit the old company had erected an engine-house, and this is now used for pumping with the Cornwall pump and a walking beam or bob. This pump throws out at every stroke a force of water consisting of 4 ft. long and 9 in. in diameter. Near the mouth of the shaft is erected an engine-house, in which the engine, crusher, jiggers, &c. are placed, and nearer still to the mouth of the shaft is another engine for hoisting. The mine is now in the best possible condition for working, with all the appliances, and plenty of good hard maple wood ready at hand for fuel.—The Probable Results: It is expected that when the mines reach the 38 the gangue will have decreased and the galena will have become more compact. It is proposed to drift and open up the 38 fm. level, and going further west pass out under the engine-house and under a swamp and lake. Here the best ore may be found, and if in the 38 fm. level the ore should prove as good as in some other parts of the mine, by stoping between the 38 and the 28 fm. levels a large quantity of rich ore will be obtained. This ore after being cleaned by the jiggers is sent into Kingston in barrels, and taken to the smelting works there. It is there turned into metal and sold.

Another year of pluck and perseverance on the part of the English owners of the Frontenac lead mine will no doubt place them in possession of one of the richest lead mines in the world. The vein is so large, so well developed, and the amount of ore that has been taken out already gives assurance that the deeper they sink the better prospects they will obtain. One great drawback is the cartage of the ore to Kingston over the miserable roads. This costs about $2·50 cents a ton, about 10s. sterling. It is a great tax on the produce of the mine, and if the mine developes, as we have every reason to think it will, it would pay the owners of the mine to put on a small narrow-guage railway. They would be able to get a bonus from the Government, and perhaps also from the Municipality. This ore assays 3 ozs. per ton in silver, and has about 80 per cent. in lead. It is proposed we hear to put up a Pattison furnace at the smelting works, and if so they would receive ore from any of the rich silver mines that may be found. If, for instance, the Croesus Mine, which assays $75 in silver, $6 in gold, and 500 lbs. of lead, be found to be a well-defined vein, and not a pocket, there would be work for the smelting works forthwith. It would pay the owners of the Frontenac to develope that mine on a royalty were it only to give work for the smelting works, and save the 3 ozs. of silver per ton which is in their own ore.

The great trouble about Canada is the want of capital and experience in mining. Nature has done everything for us, both in the Madamaska and Thunder Bay region, yet man has not been able as yet to make Canada what it ought to be. Canada is one of the richest mining countries in the world, yet our Government and people are too slow to take advantage of it. Would that the younger sons of some of the rich English smelters would come to Canada and turn their attention to her resources. However, the owners of the Frontenac deserve the confidence of the people, and the thanks of the country. Their perseverance and pluck will no doubt reap a rich reward, and by economy in working and knowledge of the ways of the people they will be able to turn their money to the greatest advantage; then the capital of England will turn towards the brightest jewel in the crown of Victoria—the Dominion of Canada.—*Toronto, June* 3. BOURNONITE.

DIAGRAM OF THE FRONTENAC LEAD MINE—SHAFT, 12 × 8 FT.



AUSTRALIAN TIN.

SIR,—The enclosed "leader," cut from this evening's Telegraph (April 12), must be my excuse for again writing to you, having done so at length by last mail. This is the first leader that has been written here on this subject for a long time, and it is so wide of actual facts that unless challenged might, if quoted by any of your newspapers, have a very damaging effect upon your market. In my last letter I gave your readers facts and figures that cannot be disputed, and with which the writer of the said article is totally unacquainted, showing a reduction last year of at least 1000 tons pure tin in the supply from the Stanthorpe or New England tin field. The supply from the Tasmanian mines may have made up this loss, and much more; but the Northern Queensland newly-discovered tin field only yielded 7¾ tons to the world's supply up to Dec. 31 last.

We colonials are very much given to "blowing," and your readers can take this article as simply a blow. If anything in it was actual fact relative to the great new discovery near Byerstown, about 60 miles inland from Cooktown, the port, the other side of the picture is this. The country in that district is all new, and, no matter how extensive and rich it may be, the tin stream can only be worked by the wet process or washing for four months in the year—the present time, autumn—one month of which is gone. What possible likelihood there is of glutting the world with tin within the next three months from them I will leave your readers to guess. A man may get 1 ton in one day. So did the first diggers once or twice when Stanthorpe first opened; but it did not happen very often, nor will it at Byerstown, although the circumstances are very much more in its favour if the tin is there, because the pockets in the watercourses are deep, and there is absolutely no stripping. All the alluvial workings being shallow, and, like the gold fields in the same district, easily worked out, it will cost very little to get the tin; but the cartage to Cooktown will be for some time as much as the tin is worth. It will take years to get the tin of that country to port low enough to pay. So much for the leader. Now, with Stanthorpe the case is different—low prices have had an economical effect on production. The cost of getting has been very much reduced—from 5*l.* to 18*l.* per ton. The average I am sure during the past year was under 15*l.* per ton. The cartage to port has also been reduced—smelting charges and freight to London also considerably reduced—so that the miners had a better profit on their work last year than the year before; yet there has been a decrease of 1000 tons on the year, owing, no doubt, to the long drought. RESIDENT.

Brisbane, April 11.

"It is perfectly plain and clear that the Phœnicians knew nothing of Australia, else they would never have gone to the Cassiterides for tin. From the far south, and from the far north alike, we hear of fresh discoveries of this whilom precious metal in vast quantities. A telegram from Hobart Town the other day spoke of the finding of mines on the western coast of Tasmania, equal in richness to the celebrated Mount Bischoff Mines in the same island; and yesterday we printed intelligence from Cooktown to the effect that a bed of very rich tin ore had been found at Granite Creek, near the head of Stoney Creek. One man, it is said, can obtain a ton of ore in a working day. If these stories are not exaggerated the question will be—What are we to do with our tin? Already the Australian exports have reduced the price of this metal by fully one-half. Previous to the deposits of ore on and across our southern border being discovered ingot tin was worth 120*l.* to 130*l.* per ton in London. Now it is quoted at 63*l.* This great diminution in value is entirely owing to the large output of Australian mines. There has been no decrease of the use or consumption of this article; on the contrary, the diminished price has had the very natural effect of bringing the metal into greater use. Moreover, the comparatively cheap rate at which the Australian supply can be obtained has shut up most of the old sources of supply. The Cornish mines for the most part no longer compete, and the Island of Banca is also altogether out of the race. In olden times—that is before our tin era—the Cornish and Banca mine proprietors regulated the supply of tin so as to maintain high market prices. They had the game practically in their own hands, and they played it in the usual monopolist fashion. But the Australian discoveries changed the aspect of affairs. All efforts to keep up the price failed; it went down by jumps until it reached even a lower figure than ruled at the latter end of the last century, when the Banca exportations were at their height, and before the markets of the world had been fully explored. The market

has certainly shown a tendency of late to recover itself somewhat, but these new finds must nip this improvement in the bud. If one man can secure a ton of ore in a day, as our Cooktown correspondent alleges, tin-sand must be in fabulous abundance, and prices must again recede. The chief obstacle to this contingency is the expensiveness of carriage, which operates as the most potent check to delivery both here and in Tasmania; but this obstacle grows less year by year. Railways and roads are being continually extended and improved, and it may be taken for granted that wherever tin prevails in otherwise payable quantities the transport difficulty will be speedily overcome. Pack-horses in the Cook district will give place to drays, and drays in their turn will be superseded by railways.

If the discovery at Granite Creek is as important as we are led to expect a new phase of the Chinese difficulty will assuredly arise. The collecting of stream tin is a class of work exactly to the mind of the average Celestial Coolie; and if this sort of ore abounds to any considerable extent in the Cook a new incentive will be given to Chinese immigration, and possibly to the anti-Chinese antics of the Government. Persons, whether European or Asiatic, taking up mineral selections are almost certain to use the cheapest available labour for working the same, and there can be little doubt that on this score Chinese labour will be preferred. How will the Government attempt to deal with the case if it arises as we conjecture? That they will make an effort to shape things to what is commonly regarded as the advantages of European labour may be taken for granted, since to allow matters to find their own level in this reference is altogether opposed to the policy of the Premier."

PORT PHILLIP AND COLONIAL GOLD MINING COMPANY.

SIR,—In reply to the letter of "X. Y. Z.," in last week's Journal, I beg to say that owing to a clerical error the monthly report was dated April 27, whereas it should have been *March*.

Moorgate-street, June 27. J. W. PURCHASE, Secretary.

DON PEDRO NORTH DEL REY.

SIR,—As a shareholder in the above-named gold mine I attended the meeting held a short time since, and must say I was most favourably impressed with the manner the business was conducted, and the evident earnestness of the officers for the well being of the company. I for one came away fully impressed with the conviction that the affairs of the same could not be in better hands. All mining that gives profitable results to the shareholdera is metaphorically a gold mine; but there is one great advantage in gold mining which must not be lost sight of—it is the only metal which has a standard price, and if a sufficient quantity can be got there is the satisfaction of knowing that the production is not subjected to the fluctuations in price which other metals suffer. This makes gold mining one of the best speculations. If a profit is shown, which I am sanguine enough to believe is coming, the shares must rapidly increase in value. I am persuaded that Capt. Vivian is doing his utmost in harmony with the directorship to forward the true interests of the property, and having done so much and shown such results from ground left behind as too poor, I can but think with the new pumping machinery at work, and with (say) 20,000*l.* to call up if required, and no debenture bonds to sap out the life of the mine, we as shareholders have every incentive to look forward to good results from our gold mining spec.—*Mincing-lane, June 26.* VERITAS.

JAVALI GOLD MINE.

SIR,—I read with pleasure "Shareholder's" letter in last week's Journal, pointing out the great improvement that has taken place in the above mine during the last few months; although this is what is called the dry season, the last three monthly returns have been at the rate of nearly 10,000*l.* per annum gross profit. The facts stated by your correspondent must have escaped the notice of the investing public, or surely these shares would not now be selling at the low price of 9s. per share. If these are only worth 9s., how comes it about that Chontales, that has made no profit for months past, are marketable at 10s. to 12s. per share? Surely there is ample room for a great rise in Javali, as with the wet season now setting in the late large profits should be materially increased.

June 27. X. L.

THE NEW SPECULATION—GOLD MINING.

SIR,—In reply to "Mining Investor," I beg to say I fail to see how my letter, which appeared in your valuable Journal of the 15th instant, can be objectionable either to Capt. Vivian or the Don Pedro Company (or at least that portion of the company who believe in legitimate mining). If "Mining Investor" has such a knowledge of Capt. Vivian as he professes he would have had no reason to enquire whether he (Capt. Vivian) had ever been to the Argentine or not. If it be true, as "Mentor" states, that the Argentine Company, to which Capt. Vivian belonged, died in liquidation and ruin, he would not be likely to have had anything to do with the present Argentine Company, which has been raised, Phœnix like, from the ashes of the old one. "Mining Investor" must not forget that in his letter which appeared in the Journal of the 8th instant he sets Capt. Vivian above the whole mining community when he writes—"What lodes are lost he will find; if he does not there is no man in the world who can." My opinion is, that good managers, like good mines, require no puffing; and I would advise him to await patiently the final result. If Capt. Vivian makes the mine pay good dividends, well; if he cannot I know of a party who can, and will be prepared to do as soon as an opportunity occurs.

I can assure "Mining Investor" that there is no man living who wishes for the success of the Don Pedro more ardently than I do, and my only object in pointing out the cause of the company's failure is written with the best of intentions, and in the interest of the company. I cannot undertake any further correspondence of a personal character; but I shall be quite prepared to enter into any correspondence which may have a tendency to promote the legitimate interest of mining. A CONSTANT READER.

Truro, June 22.

DEVON GREAT CONSOLS.

SIR,—It has often been said that litigants rarely gain anything by litigation—that the party who gains the victory is a loser as well as his opponent. In civil law this occurs from the fact that the legal gentlemen employed to conduct or to defend the action charge so dearly for their services. Law is an expensive luxury. But losses other than those resulting from litigation often follow contested points. In the contest lately existing between the directors of Devon Consols and the labourers, who has gained anything? It is true that the men have gained their object by preventing in their case an immediate return to the calendar month, but what has it cost them? Not less than 6*l.* per man—two months' wages—which is more than they will gain by their success on that occasion during their lifetime. There can be no doubt that their abstention from work for two months brought them and their families to great (wilful) distress, and, therefore, sympathy for them was undeserved and misplaced. The same may be said in regard to all the strikes which have taken place in this country from the first. Both masters and men have been losers in all of them. Many large works have been relinquished, and many considerable employers ruined, with no advantage to any person, but mischief to all who depended on the works for a livelihood. In Devon Great Consols the men, I think, have lost more than the company. The men are what persons designate "pig-headed." They lost two months' pay in foolishly contending for a shadow. The chairman of the board of directors offered them advantages beyond what they asked—24, instead of 13, payments per annum.

I am sorry to see such an abnormal state of things—men becoming masters over their employers. It is a new thing. I would not be a party to a tyranny over the labouring population, but now the labourers are exercising a tyranny over their masters—their employers.

Mr. Watson, the chairman of the board, who attended at Tavistock to meet the men, had no alternative but either to continue the four-weeks mode of payment or suspend all operations at the mines *pro tem.*, because it appeared the enginemen and all others who attended to the machinery, &c., would follow the strikers by deserting the mine upon an intimation that the men had not their own way in this matter.—*Truro, June 25.* R. SYMONS.

SOUTH STAFFORDSHIRE COAL AND IRON TRADES.

SIR,—My attention has been called to "Resident's" letter, published in last week's Journal, and allow me to tell Mr. Resident that we have long since known of all the advantages he has referred to, and that we have disadvantages he has not been able to see. The South Staffordshire coal district is divided into three parts:—

1.—The Walsall and Bloxwich.
2.—The Wolverhampton and West Bromwich.
3.—The Dudley and Stourbridge.

The first of the three—Walsall, Bloxwich, Cannock Chase, &c.—forms the privileged district; the other two are the afflicted districts.

The former has the finest house coal, which, taking all the year round, commands a much higher price, calculating upon all they get, than our best Thick coal pits in our other two districts, which are truly afflicted with a drainage rate of, we are told, limited to 1s. per ton, so that if I raise 1000 tons per week, or 50,000 tons per year, I have 2500*l.* to pay for drainage rate, whilst the No. 1 district has not a farthing to pay. Again, look at our outlay in collieries. Take a few of them, for instance—Sandwell Park Colliery Company, capital about 100,000*l.*; Cakemore Colliery Company, between 80,000*l.* and 90,000*l.* In short, all our collieries are very heavily burthened, and we have to contend against a district which has no water drainage rates to pay, and collieries producing the finest house coal in Staffordshire. The people (No. 1) do us more harm than importers from Durham and Wales or any other place.

Let "Resident" show us how we can make No. 1 district pay the drainage rate of 1s. per ton, and he will then do us a great service. The owners of property in that district should know all about this, and demand 1s. per ton more royalty. Why should their tenants get all the advantage? Let us be on the same footing.

West Bromwich, June 24. COAL MASTER.

ROCK DRILLS.

SIR,—The method of reciprocating the pistons of rock drills in Frölich's patent, described in last week's Journal, is substantially the same as that shown in my patent, No. 3342, A.D. 1874, which I have abandoned as being too slow, cumbrous, and costly in comparison with my new system. E. EDWARDS, C.E.

Southampton Buildings, Chancery-lane, June 26.

URE'S DICTIONARY OF ARTS, MANUFACTURES, AND MINES—VOL. IV.

SIR,—Intimately knowing Mr. Darlington as I do, I was very much surprised to learn from your review of the above work that he had given such an invidious prominence to his own inventions in his article on Rock-Boring Machines. Through the kindness of Prof. Hunt I have since had an opportunity of personally examining the paper, and I am at a loss to conceive how such a conclusion that other inventors were "virtually ignored" was arrived at. What are the facts? Sixteen full pages are devoted to descriptions and illustrations of compressors, stands, &c., with incidental allusions to those employed in conjunction with his machines; six pages are given to the history, development, and merits of some of the successful drills now before the public, in which there is only a brief and modest reference to his own, not nearly so extended as his separate remarks on the Sommeiler, Ferroux, Vach's, and Osterkamp's machine borers, and Jordan's recently invented pneumatic rock drill. The remaining thirteen pages consist of tabulated data, tools, system of drilling shot-holes, electric blasting machines, fuses, diagrams, the relative cost of machine and hand labour, and sundry useful and important facts. With his usual ability and perspicuous manner Mr. Darlington has given a complete and instructive description of the whole subject, and every candid reader will thank him for the large amount of practical and valuable information found within the limits of his article. J. B.

Isle of Man, June 25.

A PROTEST.

SIR,—Could not your correspondent, R. Tredinnick, confine himself to mining matters, or at least when he travels out of this region try to express himself as a gentleman? The Journal is read by men of every political creed, and in it we all choose to lay aside for the time our political convictions. There are those who differ in some matters from Lord Beaconsfield and Mr. Tredinnick, and it is offensive to them to be branded as "extreme radicals and insane fanatics." Certainly, in your pages they have never been insane enough to pour phials of contempt and vituperation on Lord Beaconsfield, and they claim consideration from persons possessed of so much superior wisdom as Mr. Tredinnick. I hope, Sir, that in future this gentleman will stick to his mining text, on which I imagine his judgment may be trusted more safely than in the arena of cosmopolitan politics. A CONSTANT READER.

PANT-Y-MWYN LEAD MINE.

SIR,—I wrote you some time since on the above mining property, and was glad to see a report from the agent at last in your valuable paper of last week. I am sure all the shareholders cannot fail to be highly pleased with it. The report bears out the opinion of all those who know anything of the property, and cannot fail to convince them that Pant-y-Mwyn will be a lasting and profitable mine. I am glad to find that they are driving cross-cuts to intersect the side lodes, and that the agent's opinion is (judging from the appearance of the ground in the cross-cut) that good lodes will be found both north and south of the lodes now being worked. The adit level being 50 fathoms from surface there will be an immense quantity of ground above, to be worked out when the lodes are cut. Should these lodes only contain a small quantity of ore good profits can be made, as the lodes generally are easily worked, and the sides strong. The lead also being in a solid state the dressing will not be expensive. I hope to be in the neighbourhood shortly with a few friends, when I will send you all the particulars I can glean. I am glad to see the North Hendre Mine doing so well. It shows that if the district is properly developed good results will follow. I hear that the Deep Level Scheme (Halkin) is likely to reach a point soon that will let the water down from Rhosesmoor Mine, at the bottom of which they have a very rich course of lead ore.

Aberystwith, June 22. TOURIST.

PARACOMBE MINE.

SIR,—I have recently visited the above mine, and inspected the whole of the underground workings. The deep adit taken up near the River Heddon is driven north about 15 fms., where the lode is intersected, and as the drivage has been extended into the hill on the course of the lode, its character and composition is certainly all that one can desire for making rich deposits of silver-lead ore. The lodes to the north of this one also present a highly promising appearance, and I confidently believe that when they are reached by the deep adit (where backs of about 35 fms. would be gained) this mine will prove itself to be a rich and lasting one. From the appearance of the ore taken from the lode I should imagine that the assay would be high for silver. This property is really a very extensive one, and has been secured on favourable terms indeed, with regard to royalties, &c. The mine is divided into 6000 shares, and about half that number I find are held by parties in the immediate neighbourhood.—*Bristol, June 25.* THOMAS MITCHELL.

GREAT WHEAL RODD.

SIR,—Having recently accompanied two of my friends, who were desirous of seeing this mine before taking an interest in it, I have great pleasure in stating that they were highly pleased with their visit in every respect. The mine is opening out well, and I was glad to find that the remarks that have appeared from time to time in your valuable Journal, as also the reports of Capt. Hosking, the manager, can be relied upon as having been free from any false colouring, or anything else that might tend to mislead the public. On our return from the mine we paid a visit to the offices of the company, Torquay, to gather a few particulars from the secretary, Mr. W. D. Mann. I observed from the deeds (which are held for 21 years) that the dues are exceedingly favourable, being only 1-20th. In the prospectus it is stated that it is not expected more than 1*l.* per share will be required to be called up, but it is believed by many who are competent to give an opinion that even less will suffice to make Great Wheal Rodd a dividend-paying mine. It is situated about seven miles from Liskeard and eight from Callington. There is a fine stream of water, and also a good road running through the property, and the Caradon mineral railway is only about two miles distant. The nominal capital of the company is 12,000*l.*, in 6000 shares of 2*l.* each.—*Plymouth, June 24.* ALFRED WYATT.

REMINISCENCES—No. IX.

SIR,—There is a human experience in constant succession of changes. The poor, sometimes, by a kind Providence—which people call good luck—are raised into a measure of affluence, but who afterwards by mismanagement, extravagance, or ill-advised speculations, lose all they possessed. I knew a gentleman who was so raised by taking shares in a mine, which became very rich soon after, and the profit on his shares amounted to nearly 2000*l.* He immediately commenced a scale of living which could be maintained only by a continuance of success, which did not occur, for the profits were only temporary. The man got into debt, and was sued at law, but he kept the executioners (bailiffs) at bay a long while. He would look out on them from his chamber window, set them at defiance, and laugh at their inability to take him or his goods. I do not remember whether or not he was in Bodmin gaol at all for debt. Since then the law has undergone alteration; if bailiffs know the debtor to be in the house they can now force an entrance. He was fond of show, and of being thought well-to-do. One day at Redruth, speaking with some one, he said—"I am going to Truro to-day; my carriage is on the top of the hill waiting for me." The person had the curiosity to follow him to the top of the hill to see what kind of carriage he kept, and there saw him enter a common van! After this he became rich through a fortunate connection with a foreign mine, which yielded large profits regularly till his decease, and I believe are still continued to his widow, who is a good lady.

The success of the late Mr. Bickford, the inventor of the "safety fuse," manufactured at Tuckingmill, is known to most of your readers. He was poor a man—I mean the father of the late J. S. Bickford—before he patented that invention; but he afterwards made money rapidly, in conjunction with his son-in-law, the late Dr. George Smith, and Mr. Thomas Davey. It is said that Dr. Smith left 50,000*l.* personality. I think that Mr. J. S. Bickford left more than that amount, because he was very successful in mining. Dr. Smith was a self-taught man, and raised himself into honour by his numerous historical and theological writings. He began life as a carpenter. I do not suppose that he gained much by his publications; the fuse made the fortunes of all the three partners.

Capt. Thos. Richards, of Redruth, who was formerly the manager and purser of about 15 mines at one time, has relinquished mining, and all the mines with which he was connected are idle. The late Mr. F. Pryor, who was also purser and manager of about 12 or 15 mines, the whole of which are idle, and he is deceased. At one time he possessed about 60,000*l.*, but he left very little behind him when he left life's stage. Capt. R. Pryor held the position of manager and local purser in eight or ten mines, the whole of which are also abandoned. These instances show the mutations in mining affairs. He is still living, and intends to operate in the Gwennap district this summer. I am told that he has something in hand which will pay well.

Captain Joseph Vivian has had more to do with mines than, perhaps, either of those already named, because he was longer in the mining field. He had many mines under his control, but he was not the purser of all, if any, of them. South Condurrow, Tolcarne, and Tolgus Consols are the only mines now at work which were started by him, but he is now the manager of the last-named alone.

Many years ago (about 20) it was found that the water taken out of a well in Camborne was tasting bad. Upon examining the well the remains of an infant were found in the water, some wicked woman, as was supposed, to hide her shame having thrown it in.

The West Briton a few weeks ago mentioned a singular circumstance which occurred at Camborne. Two girls who were going home took different roads thither, but one of them has not been seen since. No one can account for the disappearance; it is a mystery.

Mr. Llewellyn Newton, of Camborne, is still living, aged about 93. He was lately an accountant at Messrs. Bickford and Co.'s, at Tuckingmill, and about 60 years ago at Crenver and Wheal Abraham. Mr. Thomas Treloar, at Messrs. Grylls and Hills, Helston, has been standing at the desk there ever since 1806.

Somewhere about the year 1822 a man was shot in mistake. For some cause, which I do not now remember, a rich gentleman, who died nearly 20 years ago, was disliked by the miners of Gwennap, and one of them full of hatred intended to put him to death. With this object he waited by the roadside near Wheal Busy, expecting him to pass there on his way from Truro. He thought that he saw him pass on horseback and fired, but he mistook the man, for it was Mr. Rouse, of Whitehall. The wound was mortal, for after a few days of suffering death supervened. A certain miner was suspected, and brought before the dying man, who appeared to know, or think, that he was the murderer, but there being no evidence to convict the sinner was not punished by human law. I doubt not that long ere this he has gone to that place whence there is no return. Whether he escaped the custody of devils I cannot say.

The late Mr. Benjamin Sampson, of Tullimaar, near Perranwharf, who died in 1840, was an instance of rising in the pecuniary scale. Like Dr. Smith, he began life in a humble position. He was brought up as a carpenter, and worked in that capacity some years at Tresavean. He was a clever man as a mechanic, and became connected with Perran Foundry Company first as a clerk, and afterwards as a partner, but his purchase of a large share in the Kennal Gunpowder Company was the foundation of his wealth. At that time it was the only manufactory of gunpowder in Cornwall. Now there are two or three others where blasting powder is made. For a long series of years the Kennal Company supplied nearly all the demand for powder in the county at their own price. He held shares in many mines, but I do not think that he gained anything by his speculations, except at Tresavean. He was very liberal in paying everybody. He would rather over than under pay those who served him in any way. He was also generous in giving in support of any good cause. He had no child, except one that was dropped at his door, a girl, who was taken and adopted by Mr. Sampson, nursed, and educated. She was married to a clergyman, Mr. Sampson settling an annuity of 200*l.* per annum on her for her natural life. She and her husband are dead I believe. In the latter part of the year 1840 Mr. Sampson, Mr. R. Lanyon, Mr. G. Simmons, and I were dining at the Royal Hotel, Truro, when Mr. Sampson said "I am unwell, I can only take a little pudding." He afterwards said "Mr. Lanyon, if anything should happen to me you will find my will in ———(naming the particular place)." He rode home, took his bed, and soon died, leaving his property to his nephew, Mr. Cloak, who afterwards took the name of "Sampson," instead of that of Cloak, or Cloke. Young Sampson married a clergyman's daughter. They both loved the bottle and died childless. The property was devised to the late Mr. Shilson, of St. Austell, a solicitor, the testator overlooking his brothers and sisters, who should have had it all, on the ground of natural affection. Tullimaar is now the property and under lease from Mr. Basset, of Mr. F. H. Cock, solicitor, Truro. It is a pleasant residence, overlooking Perran Creek and Carclew plantations.

In the office with Mr. Sampson, at the foundry, was a Mr. Wm. Wilson; who, although brought up as a gentleman, acted there as a clerk. I do not know what it was that induced him to commit suicide, which he did commit by cutting his throat. He was evidently a man of cleanly habits, for he took care that the blood issuing from the wound should not soil the bed or the floor, for he put a basin on the floor to catch the life stream, while he held his neck

over it. This occurred about 30 years ago. I heard that another broker shot himself, and that another was killed by a fall from a horse. Speaking of suicide, I remember a remarkable instance which took place in the neighbourhood of Helston about 40 years ago. A man, the son of a farmer, was quarrelling with his sister one morning. A brother who was present said to him "If I was in thy place I would go out and hang myself." He took the advice, went out to the stable, where he was found hanging lifeless a short time afterwards.—*June* 20. OBSERVER.

THE PARIS INTERNATIONAL EXHIBITION.

No. VII.

[FROM OUR OWN CORRESPONDENTS.]

Returning to the Queensland section in the Exhibition, we may state in passing that very rich tin mines exist, and are worked at the most southerly point of Stanthorpe in that colony. The principal rock formation at that place is granitic, and forms a table land, elevated some 2800 ft. above the sea level, with a beautiful climate similar to that of the South of England. The famous Darling Downs is one of the finest pastoral districts in the world, having an altitude of 1600 ft. above the sea line, and here the climate resembles that of the South of France. The Australian Cordillera runs parallel with the coast for 1800 miles, and about 70 miles inland. This chain of mountains separate the Darling Downs from the Moreton and Logan districts, which are rich in the finest coal, with a good soil well watered. A seam of splendid coal has been discovered at Walloon, as much as 9 ft. in thickness, and fulfils all the conditions of a first-class export coal. The Gympie district is celebrated for its rich mineral deposits, and its gold and copper fields have produced great wealth. Gold was first discovered there in 1867, and the first find amounted in value to 17,000*l*. It is a peculiarity that the rich quartz and calcspar reefs traverse greenstone or diorite rock.

The New Zealand, Lady Mary, Smithfield, Monkland, Caledonia, and other reefs produced splendid yields of gold. Up to 1870 the magnificent yield of 2½ ozs. average per ton of quartz have been maintained. This district is still in a very flourishing condition, and appears to offer a fine opportunity for capital. The rivers Burlekin and Fitzroy drain a very large tract of country. All the precious metals are here in great abundance, gold, silver, copper, and lead being frequently found in the same quartz reefs. The Cloncurry copper mines are very rich in the beautiful clear red crystals of the famous ruby oxide. It is well known that the district near to the Cloncurry river produces some of the most superb oriental agates and sardonyxes in the world, surpassing, indeed, the best deposits of Uruquay and Brazil in size, transparency, and brilliant colouring of stones. The western portion of Australia is well known to produce very large and clear red growing chrysolite and opals; these are chiefly found in the Bennett river.

The town of Warwick is surrounded by fine farms and vineyards, and only 50 miles from the railway station large tin mines exist. The town of Rockhampton is also the centre of a rich gold and copper district. The mineral districts are numerous; some of the most important are Star River, Ravenswood, Charters Towers, Cloncurry, Cape River, Peak Down, Morinsh, Gympie, Talgai, Kilkinan, &c. The average yield from auriferous quartz crushing on the several gold fields was 1 oz. 14 dwts. 20 grs. per ton. Some of the gold fields are on tributaries of rivers falling into the Gulf of Carpentaria. There is no duty on gold found in Queensland, so that it is difficult to obtain a correct return, but it has been ascertained that the yield of gold in 1834 was one million sterling. In 1875 the value of the gold found in Queensland was 1,498 433*l*., and that exported in 1876 was 1,427,929*l*. In 1876 the extent of the auriferous alluvial and quartz ground worked upon was 3100 square miles. The value of copper smelted in 1876 was 147,000*l*.; the value of tin in the same year was 102,030*l*.; the export of other mineral than gold was 359,633*l*. The different geological formations in square miles are approximately as follows:—Alluvial, 43,520; cainozoic, 150,000; mesozoic, (*i.e.*, cretaceous and carbonaceous), 210,000; paleozoic, carboniferous and Devonian, 70,000; metamorphic, 50,000; granitic, 114,000; trappean, 12,000; volcanic, 20,000. In 1876 the area of the municipalities were 155 864 acres, and the area of mineral lands selected for mineral purposes was 166,694,707 acres. The area of land reserved for public purposes in the same year was 209,281 acres. The imports and exports from 1867 to 1875 are as follows:—

	Imports.	Exports.
1867	1,747 735	1.989,600
1868	1,899,119	2,107.437
1869	1 804,578	2,166,806
1870	1 577,339	2.533,732
1871	1,562,665	2.760,045
1872	2,218.717	2,998 934
1873	2,885,499	3 542,513
1874	2,962,439	4 106.462
1875	3 332.900	3,857,376

For the year 1875 the export of gold and other metals amounted to 1,847.575*l*. At present the exports exceed the imports by over 1,000,000*l*. per annum. Since 1859 the revenue and expenditure have been on the increase. The following statistics exhibit this:—

	Revenue.	Expenditure.
1859	£ 6,475	£ 8,689
1869	772,859	770.796
1873	1,120,034	956 335
1876	1,263.268	1,283.519

In 1875 the value of the wool was 1,366,000*l*., and in 1876 it was 1,499,576*l*, and the population amounted to 187,100. The proportion of the population to the area of land is, therefore, 1 to 3½ square miles. The figures given will show the increasing and vital power of the colony. Queensland has 272 miles of railway opened, 200 miles now under construction, and 233 miles more authorised by Parliament. The telegraph lines reach from the southern boundary to the Gulf of Carpentaria, connecting every gold field, town, and village. There are 120 stations, and 4708 miles of line opened.

The Queensland Court in the Exhibition was arranged for the Commissioners at the Paris Exhibition by Mr. W. H. Ashwell, C.E., Executive Engineer to the Queensland Government Agency in London. The difficulty of arranging the different exhibits in this Court, so as to give a fair idea of the general features of the colony without overcrowding, has been admirably got over. The physical character of the country is shown by a series of photographs, illustrating the various geological formations of the country. Beneath the photographs the natural products are presented to view in specimen cases. The geological formations, mining, pastoral, agricultural, and other industries are each represented in sections. The greatest amount of hall space has been obtained by the arrangements adopted. The court-hall is formed of wood, 10 ft. high, and all sides of the wall are covered with photographs. The admission to the court is by entrances 6 ft. wide, diagonally at the corner.

In the centre of the court are arranged other cases, with a raised case in the centre, containing gold specimens. Below the show cases around the walls are arranged geological maps, showing the position, &c., of the various strata. The geological specimens are found in section No. 1 in the show cases before referred to. Nos. 194 to 219 consist of alluvial soil and other specimens, such as cainozoic, mesozoic-cretaceous, mesozoic carbonaceous, palæozoic-carboniferous limestone soils, palæozoic-devonian metamorphic soils, granitic, trappean, acid-trap, basic-trap, and volcanic soils, also specimens of cainozoic rocks, mesozoic, palæozoic, granitic, trappean, trappean-surpentine, volcanic and volcanic rocks, showing opals, &c., with pebbles found in the volcanic series. The marble exhibits are numbered from 220 to 224. Granite, freestone, sandstone hardstone, claystone porphyry are numbered from 224 to 229 inclusive. The exhibit No. 230 under Section 2 consist of a collection of fossils obtained from a coal mine near Ipswich. Blocks of marble, granite, malachite, and siliceous powder are exhibited under Nos. from 231 to 234. No. 235 is an exhibit of gold specimens, one of which is Palmer River gold 3 ozs. 11 dwts. There are others from Caledonian Reef, Alma, and other reefs. Exhibit No. 236 is a case of gold specimens, 44 in number. Gold shown in various matrices.

No. 236 comprise specimens of auriferous rocks. No. 238 geological specimens from Ravenswood gold field—*i.e.*, two pieces of pyrites containing 41 ozs. 3 dwts. gold, and 2·72 per cent. of copper. No. 239, specimens of copper ore. No. 240, collection of ores from Mount Perry Mines, copper district—*i.e.*, 1, antimony; 2, 3, 4, 5, galena (silver-bearing); 6, red oxide of copper, with green carbonate of copper; 7, 8, 9, 10, red oxide of copper chalcotrichite; 11, 12, blue carbonate of copper; 13, grey copper ore; 14, copper pyrites; 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, copper pyrites; 43, 44, 45, 46, 47, 48, black copper from smelting furnaces; 49, smelted copper from furnace. No. 241, ingots of copper (½ ton) from Mount Perry Mines.

Under section No. 3, from 242 to 248, we have specimens of quicksilver. Cinnabar stream tin, and ingots of tin (½ ton). Under section No. 4 we have specimens numbered from 249 to 265 inclusive, consisting of tin ingots, stream tin, chrome iron, colours made from chrome iron—chrome orange deep. There are other similar exhibits, also essential oil—extracted from iron bark tree—only formed on the western watershed of Cape Yorke Peninsula; plumbago, regulus of antimony, block of antimony, sulphide, silver-bearing galena, producing 122 ozs. to the ton. We have specimens of coal numbered from 266 to 281 inclusive; 282 it also a specimen of coal from the coal mine of Brydon and Co., near Ipswich. An analysis of the coke made from this coal has been found to contain: Ash, 12·4; sulphur, 0·9; carbon, 86·6 = 100.

In the trophy space allotted to Queensland in the dome containing the Prince of Wales' Indian collection will be found the following interesting exhibits:—No. 774 is a picture of a Native, from enlarged photograph, and arranged round this picture will be found, numbered 775, 776, 777, a collection of native weapons. Exhibit numbered 778 is a map of Queensland. The Queensland trophy has been arranged as follows:—In the centre is an obelisk representing the value of gold, 2,646,916 ozs., or 10,587,664*l*., exported from the colony between the years 1868 and September, 1877, and having at its base tin and copper, supported by specimens of copper ore, notably a fine specimen of malachite; right and left of this are bales of Queensland cotton, with pyramids of preserved meats by the Whitehead Meat Preserving Company (Limited), of Rockhampton, and the Hogarth Australian Meat Preserving Company, having at the extreme ends two specimens of the Araucaria Biduilli Hook (Bunya Bunya), exhibited by Sir Charles Nicholson, the whole being backed up by bales of washed and greasy wools. Arranged in the trophy space will also be found specimens of Queensland timbers, collected and arranged by Mr. Walter Hill, Botanic Garden, Brisbane.

The photographs, of which there are a great number, are very fine. Nos. 1, 2, 3, and 4 are views of Brisbane, Mary river, Queensland river, and Maryvale Creek; the latter shows a cut through older alluvia, and there the remains of extinct marsupials abound, such as enormous kangaroos, the extinct dyprotodon. No. 5 is a beautiful one, and may be taken as a characteristic view of mining for gold in the deep alluvial drifts. Here the miners are seen working in the alluvium, the depth of which varies from 50 to 120 ft. Handsome returns of gold are yielded at the latter depth. Such deep sinking, however, is rather rare in Queensland, as nearly all the alluvial gold is found in shallow drifts nearly exceeding 20 feet in depth. No. 6 is a photograph of a waterfall in the Walsh river. Nos. 8 and 9 depict rough methods of sluicing and working the beds of creeks for alluvial gold. No. 10 illustrates the style of building adopted on a new "rush" on the gold fields. No. 11 represents ordinary alluvial gold mining. Nos. 12, 13, 14, 15, 16, and 17 furnish admirable ideas of the appearance and peculiarities of the desert sandstone and coast country of Queensland. No. 18 is illustrative of the way in which denudation has rendered the country suitable for settlement.

Photograph No. 19 represents a cave in the sandstone, used by a prospecting party of diggers. Section 2 includes photograph No. 20, illustrating the abrupt edge of the desert sandstone, which can frequently be followed for 20 or 30 miles without a break. Nos. 21 and 22 show creeks traversing the Cainozoic formation, and illustrating the character of the cretaceous series, which spreads itself out over the enormous area of 200,000 square miles. No. 23 exhibits an excellent section of cretaceous rocks. Nos. 24, 25, and 26 represent the formation of the Mesozoic Carbonaceous age; it is very largely developed in Queenland. In photograph No. 26 a coal seams appears cropping out on Pelican Creek, in Northern Queensland. Several coal mines have been opened in the colony, chiefly on the Darling Downs, and in the West Moreton district, and coal in any quantity can be obtained within no great distance from the capital—Brisbane. Nos. 27 and 28 are illustrative of the character of the forests usually met with on the areas occupied by the coal formations. Dense scrubs and timber are the common accompaniments of the coal formations of Queensland. No. 29 is exceedingly interesting, as presenting a very remarkable example of the junction of two different geological formations at the base of the cliff. We have a series of slates and sandstone, nearly perpendicular, in which are embedded auriferous quartz strings and veins. On the denuded upturned edges of these slates occur horizontal sandstones and conglomerates of the carboniferous age. In these conglomerates, at the junction of the two formations, in certain localities of the Peak Downs, drifted gold has been found in the carboniferous conglomerates, distinctly proving that some gold at all events existed in the veins prior to the deposit of the carboniferous rocks. Nos. 30, 31, 32, 33, 34, and 35 represent the intrusion of a dyke of volcanic rock without any apparent movement of the adjoining strata; it cut through solid marble forced by the natural drainage of the country, sandstone cut through by greenstone dyke, creek cutting through marble, &c. Nos. 36 to 44 are veins representing various appearances of the country.

There are a series of veins under Section 3 devoted to the illustration of some phases of mining life in Queensland, veins of volcanic rocks, sections of coal measures, mining of a line of reef, alluvial mining, copper mine traversing diorite, &c. Section No. 4 includes a series of views numbered from 64 to 87 inclusive, illustrative of the various scenery of the country. Section 5 includes photographic views from 88 to 131, illustrative of pastoral life. Section 7 includes photos from 132 to 151 illustrating agricultural pursuits. Section 8 includes views numbered from 152 to 172, and are of a miscellaneous character. Arranged under Section 1 will be found No. 173—map of Queensland showing alluvial areas: 174, 175, 176, and 177 are also maps of Queen-land, showing desert sandstone areas, cretaceous, mesozoic, carboniferous, and palæozoic carboniferous areas. Under Section 2 are exhibited from 178 to 182 maps of Queensland, showing Devonian, metamorphic, granite, trappean, and volcanic areas. Section 3 embraces Nos. 182 to 187, showing porphyritic dolerite, giving also tables of analysis and constituent minerals, township of Brisbane, and andesitic lava and diorite. Section No. 4 includes 168 to 187, and are illustrative of fishing for pearl shells, &c. Section No. 8 embraces 190 to 193 inclusive, consisting of head of native. Full length photo of a native man and also of a woman, and of "King Sandy" Brisbane. There are numerous exhibits of plants and trees too numerous for detail.

The WESTERN AUSTRALIAN section of the Paris Exhibition is not large. It is nevertheless very interesting. The collection of rocks and minerals exhibited is intended to illustrate the general geological formations of a portion of the colony, and as characteristic specimens representing an area of about 250,000 square miles of territory, or about one-fourth of the whole extent of the colony. The specimens are all numbered, so that they may be readily distinguished. All through the northern division of the colony ironstone, micaceous iron ore, together with rich lodes of copper have been discovered. The average percentage of the copper specimens has been proved to be about 40 per cent., when, however, it is mixed with iron the percentage of copper has been found to be about 27. These copper lodes, however, have only been worked near the surface without much system, and at the least expense, with few mechanical contrivances. Occasionally the copper ore is spangled with gold, but nothing has yet been done proving these lodes worth working. Gold has recently been discovered in the decomposed quartzite rock a short distance from Nickal Bay, and more to the westward high argentiferous galena in thin strings leading through the granite rock has also been found. Pastoral and pearl pursuits have prevented their development. The Permian and carbonaceous series are found on the course of the Lyons river, and the usual limestone beds, together with coal, exist in these series. Carbonaceous fossils and fine red and white fossiliferous sandstone beds are numerous. The fossils of this division are similar to those found further south. The Victoria district division of this colony has been carefully examined, and the geological structure minutely surveyed, and it has been found to be very rich in metalliferous minerals. The copper and lead lodes are well defined, and the true coal measures are also known to exist. An area of about 5000 square miles has been proved to be equal in quantity and quality of mineral to any province in Australia.

The quantity of ore which might be raised is almost unlimited, dependent only on the amount of capital expended in a more systematic way than that at present adopted, and the introduction of suitable machinery for raising and dressing. In galena the percentage has reached as high as from 70 to 86 per cent., and the average being about 75.

The form in which galena is found varies considerably, from the massive cube to that of a fine granular character, the latter being more argentiferous, and having an excess of sulphur. Up to the present the quantity of silver has not been sufficient to pay for extraction. The other minerals known to exist in smaller quantities than lead and copper are silver, antimony, zinc, plumbago, arsenic, and iron, and seams of coal. On the east of Northampton and Manchester river the Silurian and Metamorphic rocks crop out, and here gold has been discovered. Coal was discovered on the Upper Irwin river as far back as 1848. The characteristics of the locality are beds of blue, yellow, and black shale, in which fragments of coal occur with bands and nodules of limestone, containing carboniferous fossils, also layers of gypsum impregnated with iron pyrites. In the southern district division of the colony, and in the neighbourhood of King George's Sound, the Lower Silurian appears, and there are in this locality gold-bearing quartz reefs, one of which is being worked by a company, and yields about 14 dwts. of gold per ton.

The mineral exhibits presented for examination in the Exhibition, and numbered 1 to 10, are lead ore, obtained from the mines of different companies; 11, 12, and 13 are lead crystal specimens; 14 is a specimen of copper ore called Wheal Alpha; 15, 16, and 17 are also specimens of lead ore; and 19 is a specimen of iron ore, and is found in almost inexhaustible quantities about 36 miles from Perth. From 20 to 28 are specimens of pipe-clay, ordinary salt, and bay salt. No. 31 is a specimen of guano. The exhibit number 18 consists of three large cases of geological specimens. The first of these contains 143 labelled specimens, exhibiting the characteristic rocks and minerals of the country. The second contains 78, and the third 112 specimens, such as gneiss, felstone, micaceous grit, and sandstone, copper ore, metamorphic and igneous rocks, pipe-clay, ferruginous claystone and concretian, stalagmite, quartz, pebbles, cubic gypsum, decomposed quartz, iron oxide, pyrites, green carbonate of copper and visible gold, micaceous iron ore, auriferous copper and iron ore, trappean and metamorphic flints, and semi-opal, metagraphic, metagraphic sandstone, limestone, horneblendic graphic granite, felspar, gneiss, silecious sandstone, dyke rock, associated with mineral lodes, mudstone, claystone, talcose slate, decomposed schist with quartz veins, lode or veinstone, galena crystals, argentiferous with sulphur, galena, with pyrites in spar, galena in quartz, carbonates of lead, galena and copper pyrites, galena and carbonate of lime, carbonate copper, blue copper and iron pyrites, tourmaline crystals, and in quartz, plumbago, red ochre, egatised and coloured quartz, opaline quartz and coloured flints, quartz crystals and garnate, syenitic granite, quartzite, syenite, shell, shell cement, diorite.

The list of minerals we have given will show the nature of those exhibited. There are a large number of other articles exhibited, such as specimens of the different kinds of wood, trees, and plants found in Western Australia. There are also many manufactured articles exhibited, giving a fair idea of the manufactures of the colony. In 1866 the gross revenue of the colony was 89,388*l*.; in 1875 it amounted to 157,755*l*. In 1866 the import amounted to 251,907*l*., and in 1875 it amounted to 349,840*l*. In 1866 the value of total exports amounted to 152 240*l*., and in 1875 it amounted to 391,217*l*. In 1866 the export to the United Kingdom amounted to 103,732*l*., and in 1875 it amounted to 248.542*l*. In 1867 the number of sheep amounted to 537,597*l*., and in 1876 it amounted to 831,861*l*.

FOREIGN MINING AND METALLURGY.

Important contracts for rolling stock are about to be let at the North Brussels station for rolling stock required for the Belgian State Railways. The amount of these contracts is stated to be about 40.000*l*. It appears that last year 972 working miners produced altogether 185,000 tons of rough iron minerals in the province of Namur, the value of this production being estimated at 65.200*l*. The extraction appears to have been effected at a profit of 5360*l*. The extraction of 1877 presented a reduction of 15 per cent. as compared with 1876. This decline was attributable to the continually increasing consumption since 1865 of the minettes of the Grand Duchy of Luxembourg, which are taking the place of Belgian native minerals in Belgian ironworks. Prices remain low in the Belgian iron trade—so low, indeed, that contracts for the ironwork required for two small bridges about to be thrown over the Vesdre have been taken at about 20 per cent. below the original estimate.

An explosion of fire-damp has occurred in the Nord-Marcenelle Colliery; the explosion was happily unattended with loss of life, although several men were badly burnt. M. Berghem, princial mining engineer for the province of Namur, has just published his report on the mining industry of that province in 1877. The number of collieries in the province was somewhat reduced last year—from 39 to 38; 21 of these collieries were in activity last year, and produced from 23 centres of working 371,000 tons of coal, of the computed value of 135,280*l*.; the production exhibited last year a diminution of 22 per cent. as compared with 1876; the value of the production declined last year to the still more considerable extent of 35 per cent. The number of miners employed last year was 3253, or 520 less than in 1876. The decline in wages was very considerable last year—somewhere about 20 per cent. The average production per miner employed was 114 tons, or 11 tons less than in 1876. The average selling price was 7s. 6d. per ton, against 9s. 6d. per ton in 1876. Upon the whole, working operations appear, unfortunately, to have been carried on at a loss in 1877.

A strike has occurred among the working coal miners in the Allier. It appears to have arisen from the determination of the Châtillon and Commentry Company to reduce its extraction of coal by reason of the large stock of coal which has accumulated upon the company's hands. The Campagnac Mines Company reports that it realised last year a profit of 1s. 10d. per ton upon each ton of coal extracted; the aggregate profit for the year was thus 8626*l*. The balance remaining after meeting the fixed charges of the year was 3943*l*.; this would have enabled the company to pay a dividend of 1*l*. per share for the year, but the directors deemed it advisable to carry the balance forward instead of paying a dividend. An amalgamation has taken place between the Fretz Mining Company and the Grand Combe Mines Company. The production effected in 1877 was 666,907 tons, showing an augmentation of 15 per cent. as compared with 1876. The sales of 1877 amounted to 596,106 tons, showing an augmentation of nearly 11 per cent. as compared with 1876. The balance available for dividend for 1877 was 117.877*l*., against 131,277*l*. in 1876. The dividend for 1877 has been fixed at 4*l*. per share, payable half June 15, and half December 15.

The Northern of France Railway Company has just let contracts for 50 locomotives to various construction companies. Thus 20 engines have been ordered from the Alsacian Company at Mulhouse, 20 from Creusot, and 10 from the Fives Lille Company. The company also proposes to undertake the construction of 10 more engines in its own workshops, so that altogether 60 engines are about to be built. The demand for iron has not been very well sustained at St. Dizier. Rails are in small request at 6*l*. 12s. per ton, mixed iron is in fair request at 7*l*. 12s. to 8*l*. per ton, and charcoal-made pig has brought 9*l*. per ton. Pig for refining has been neglected, casting pig No. 3 has brought 3*l*. 6s. to 3*l*. 8s. per ton, according to the demand. Orders for machine iron are somewhat scarce and rare. Chain iron has sold slowly, and at low prices. Iron wire has main-

tained a tolerably regular but not very free sale. In the Ariege the cause which has led to a reduction in the rates current for iron still exists; this cause is the continued competition of the products of Sweden and Germany. Rolled iron is quoted in the Ariege at 11*l.* 4*s.* to 11*l.* 12*s.* per ton; at these rates it is difficult to carry on working operations. In the Nord quotations are very well sustained.

THE RAMMELSBERG MINE IN THE LOWER HARZ.*

The celebrated pyritic deposit of the Rammelsberg, near Goslar, in the Lower Harz, is remarkable, not only historically as having been worked continuously for 900 years, but also for the peculiar nature of the mineral, which is a mixture of ores of several different metals, so intimately combined that they cannot be separated by any mechanical process, and it, therefore, requires a peculiar system of metallurgical treatment for its reduction. The deposit consists of a series of irregular lenticular masses resembling a vein, but actually a bed, dipping with the stratification of the rocks (about 45°) on the east flank of the Rammelsberg, a hill about 2000 ft. above the sea-level, near the junction of the Wissenbach Upper Devonian schists with the Calceola sandstones, a lower member of the same formation; which, however, by reason of the great disturbance in the strata, are inverted in position, the lower formation being apparently below the upper one and a still lower series —the Spirifer sandstones, which form the mass of the Rammelsberg above both of the preceding. The longitudinal extension of the deposit, as far as it has been hitherto traced, is about 1300 yards, and the greatest thickness, measured perpendicularly to the strike, from 48 to 65 ft.; but at the point where an eastern or hanging branch—produced by an extreme contortion in the strata—joins the main deposit this is exceptionally increased to above 100 ft. The greatest depth of the workings is about 300 yards below the outcrop. The vein material consists principally of compact mixtures of the following minerals:

1.—Galena, with zinc-blende and iron pyrites; sometimes the latter and sometimes blende being the most abundant.

2.—Galena with barytes in variable quantities. When the latter is in excess, the mixture is known as grey ore, or when mixed with blende as brown ore.

3.—Copper pyrites and iron pyrites in every possible proportion, with some arsenical pyrites—sometimes, but rarely, free from blende and lead ore.

The pyritic masses are chiefly found on the hanging-wall and central parts of the bed, the lead ore and barytes keeping to the foot-wall side. The separation between the ore bed and the neighbouring strata is most sharply defined on the latter side; on the hanging-wall the pyritic impregnations penetrate a certain distance into the rock, forming the so-called "Kupferkniest."

Besides these minerals numerous others are known to be present, though not in recognisable quantities, as the analysis of the ores shows them to contain not only copper, lead, zinc, sulphur, barium, and arsenic, but in addition gold, silver, mercury, bismuth, manganese, cobalt, nickel, antimony, selenium, and irridium.

Another class of minerals of secondary origin is found in the old workings, where the pyritic waste has by oxidation been converted into a mixture of sulphates, and the change having also extended to the slaty rock, the whole is sometimes found to be compacted into a solid mass, which has to be worked like new ground. The mixed sulphates, principally of iron and copper, are known as copper-meal (Kupferranch), and the compact material as inkstone (Atramentstein); both are used in the manufacture of vitriol, alum, and similar products.

The working of the ore is effected by over-hand stoping, the whole thickness of the deposit being taken at the same time, commencing from the lower working level, and rising in terraces. The main levels are driven in the rock on the hanging-wall side, the ore as it is broken in the workings being thrown down through vertical shafts (mills) carried up, or nearly so, through the waste. The ground is now almost exclusively broken by gunpowder, the old plan of fire setting, which distinguished the Rammelsberg workings for so many centuries, and was almost exclusively used until within the last 20 years, having been nearly abandoned, owing to the increase in the price of firewood and the improvements in blasting materials, which allow of the latter being advantageously employed on ground that was formerly considered to be too hard for working by any means but fire. A certain advantage is, however, still claimed for the old method, on the ground of economising labour, as by its use ore ground may be broken upon holidays, when the men are out of the mine. The excavations where ore has been removed are principally secured by walling, stone for the purpose being obtained from a sandstone quarry near the principal drawing shaft, but at a higher level, the broken stone being first lowered by an incline to the shaft landing, whence it is sent down through the main levels to the working points. Timbering is extensively used in the shafts and levels, as the vitriolic mine water has a very beneficial effect in preserving wood from decay. The average annual production of ores of all kinds is about 30,000 tons, and the amount of filling material required from the surface is from 14,000 to 15,000 tons, or very nearly an equal volume to that of the ground removed.

The ores are broken underground into lumps of 6 or 7 lbs. weight, and when brought to the surface are subjected to a classification by hand, the waste and poor ores—which in the case of lead includes 6 per cent. and those of lower produce—being separated. The small mine stuff alone is subjected to a partial system of dressing by jigging-machines, which, however, does not extend much beyond separation into sizes. The ores are delivered to the smelting-works, and the vitriolic products from the old workings are sold to the copperas manufactories in the neighbourhood. In addition to these products, a certain quantity of ochre is recovered from the water, the drainage from the adit being allowed to run through pits in which the ochre is deposited.

—By F. WIMMER: Zeitschrift für das Berg- Hütten- und Salineu-Wesen.

* From JAMES FORREST'S "Abstracts of Papers in Foreign Transactions and Periodicals," for the Proceedings of the Institution of Civil Engineers.

ELECTRIC MAGNETS, AND MAGNETIC MOTOR ENGINES.—Mr. M. H. SMITH, of Halifax, Yorkshire, mechanical engineer, has patented some improvements in electric magnets, and in magnetic motor engines. The invention relates, firstly, to an improved construction of electric magnet; secondly, to an improved construction of magnetic motor engine, in connection with which are electric magnets, so arranged and operated as to render the maximum power of the magnet available as the moving force for propelling the engine. Magnets made according to this invention comprise a coil of copper wire resting upon an iron base plate, by preference, but not necessarily, circular, and surrounded by an iron case attached to the base plate. The armature consists of an iron plate, the size of the case, and an iron core of such size and shape as to fit and slide into the copper coil, so that when the core reaches the base plate the armature disc also touches the top of the cylindrical core. Or part of the core may be attached to the base plate, and part only left attached to the armature disc. Or the base and armature may both consist of a core and case, each partly filling and partly covering the copper coil. Or the copper coil may rest upon the base plate, having the iron core attached to it, and the armature consist of a disc carrying the case or core made to slide over the coil. An electric motor engine, constructed and operated according to this invention, comprises a series of magnets arranged at distances apart, forming a circle, above which is a disc resting on a pivot; the outer edge or diameter of the disc carries or forms the armatures directly above the circle of magnets. The armature disc being tilted, one portion of its outer diameter approaches one or other of the magnets In operation the apparatus works as follows:—As each magnet is charged it attracts the armature disc, and when the point of contact between the first magnet and the armature disc is reached a contact breaker operates, and the next magnet of the circle becomes charged; and in turn when the armature disc reaches the second magnet, the contact breaker again acts, and so on round the entire circle of magnets. The armature disc is thus caused to oscillate on its pivot, and "wobble" or roll upon its outer rim or edge. The motion thus obtained is by shaft and crank or other like contrivance converted into rotary motion.

Meetings of Public Companies.

CHAPEL HOUSE COLLIERY.

At an extraordinary general meeting of shareholders, held at the offices of the company, Palmerston Buildings, on Thursday,

Mr. T. THOMPSON, jun., in the chair.

The notice convening the meeting having been read,

The CHAIRMAN said: This meeting is only a formal one, held in compliance with the requirements of the Companies Acts, for the purpose of confirming a resolution passed unanimously at the general meeting held at the colliery on the 13th inst., when nearly half the capital of the company was represensed by the shareholders present. I think I may take this opportunity of congratulating the shareholders on the unanimity thus shown in support of the policy and action of the board. No fault can be found with the property —no fault has been found with the management—and so long as the shareholders work harmoniously to support and encourage those to whom they have entrusted the management, we can have no possible doubt as to the success and prosperity of our undertaking. I am pleased to be able to inform the meeting that the new engine, which called forth so much admiration from those who saw it, even in its incomplete state, on the 13th inst., is now practically completed, steam having been turned into it, its working being most satisfactory. There are a few little odds and ends still to do before it can be considered in full working order, but we have no reason to doubt that in the course of three or four days it will be at full work, thus enabling us to very largely increase our output. With that increased output we shall be making very much larger profits, and we hope we shall very soon be justified in recommending the payment of a dividend, not only on the preference shares created by the resolution which you will to-day be asked to confirm, but also on the ordinary shares, whose holders have waited patiently for the good time in store. It is gratifying to find the shareholders have not only shown patience, but so practically approve of the policy of the board that they are willing to subscribe for the preference shares as soon as asked to do so. And, from the satisfactory response which we have received already, either in the shape of actual applications or of promises to apply, we have no doubt that the whole preference capital will be raised without the slightest difficulty or delay. The resolution to be laid before you to-day requires little remark. Explanations, have, however, been asked for, and I will, therefore, state —though from the wording of the resolution it appears self-evident —that the whole net profits of each year will be chargeable first of all for dividends, up to 10 per cent., on the preference shares. I will now move the confirmation of the resolution.

It was then unanimously resolved—"That the special resolution passed at the special general meeting of the company, held at the colliery, Skelmersdale, near Liverpool, on June 13, 1878, be, and the same is, hereby confirmed."

ST. JOHN DEL REY MINING COMPANY.

The annual general meeting of proprietors of the company was held at the Cannon-street Hotel, on Wednesday,

Mr. JOHN HOCKIN, the chairman, presiding.

The notice calling the meeting was read. The minutes of the previous meeting were read and confirmed.

The CHAIRMAN said: The result of the year's operations financially are summarily set forth at the beginning of the report. We think they will be considered satisfactory by the meeting. The produce and profit are both larger than they were last year, and after paying 35 per cent. on the capital of the company, and adding 10,472*l.* to the reserved fund, we carry forward a balance of 5027*l.*, as compared with 2439*l.* last year. The year's earnings have been, therefore, fully 40 per cent. on the capital, though we prudently divide only 35 per cent.—a conservative policy which we feel sure will meet the approval of the meeting. I said the produce and profit are both larger than they were last year, but it will have been observed that they do not show an increase in the same proportion. The produce exceeds the produce of last year by 18,000*l.*, whilst the profit is only 8000*l.* more. This arises from the absolute necessity there has been for laying out more money in works of exploration, repairs, and additions to the machinery on the surface, and this we must be prepared for during the whole of the current year. The prosecution of the exploratory works during the past year has resulted in important discoveries of ore in the western sections of the mine. These must be continued, in order to fully develope the lode at this extremity. There are important works, too, to be executed in the eastern part of the mine, and improvements to be effected in the hauling arrangements, before the mine can be considered to be in the most favourable condition for economical working. All these will involve extraordinary expenditure until they are completed. These temporary drawbacks to efficient and economical working in no way, however, detract from the permanent value of the stoping ground. A careful perusal of the mine report and the superintendent's remarks thereon will convince you that the lode as developed at the end of the year presents a more favourable appearance than at the close of the year preceding, and promises permanent good results. On this subject the superintendent, writing on May 18, says—

"As to future produce, I do not think we may count on more than 36,000 to 38,000 oitavas monthly in the present condition of the mine. The altered, or flatter, angle at which the sump is now sunk has and will cause a reduction in the quantity of good mineral from this point, and until the sump reaches the eastern limit of the formation, when the sinking may be temporarily suspended, pending increase i stoping operations of the ground west of the sump, no very great increase of good mineral can be expected. The western improvement, though varying in character, is very promising. In the western forebreast the lode is small, but I am of opinion we are not carrying its full body. It will take all this year to develope this part of the mine. As regards cost, no reduction can be expected; in fact, perhaps, an increase may be found necessary, considering the large orders from England and the amount of construction works before us."

I may mention that the large orders referred to are for machinery and other materials likely to improve, and so economise, future working. The decline or otherwise in the average gold contents or yield of the mineral as operated on year by year is very generally thought to indicate the capabilities of the mine for giving profitable results. It in reality rather depends on the proportion of rich mineral quarried, and the section of the mine from which it is extracted. It should be borne in mind that in certain sections of the mine the lode is less invaded by non-gold bearing rock than in others. A glance at the plan along the stopes—No. 1 of the drawings appended to the report—will show this distinctly. At one point in the second stope it will be seen that pure lode exists from wall to wall, which can hardly be said to be the case in any other part of the mine throughout its entire length. As the lode was laid open on April 1 last it may be described as being divided into five sections, all differing more or less one from the other—differing, that is, in length, figure, and component matter. The first, beginning from the eastern extremities, and extending westward to nearly one-third of the entire length, is composed mostly of pure ore, but has for the greater part of its length a strip of quartz on the north side, and of killas, or slate rock, on the south. The next, or second division, forming approximately another third of the length, is composed almost entirely of killas, with numerous shoots of ore striking across the slate rock. Following this on the west, the third division, is found a mass of pure ore of about a ninth of the entire length of the lode, with a strip of quartz on the north side. In the fourth division we come to a mass of quartz of about the same length, with shoots of ore striking across it; and then in the fifth division at the extreme west pure ore as far as excavated on each side. These third and fifth divisions of pure ore are the discoveries of this year spoken of by the superintendent as an important addition to the stoping ground. The intrusions into the lode of quartz and killas are constantly varying. The lode stone or ore, too, in different parts of the mine yields gold in different proportions, the sump section, or a little west of it, being the richest. From this brief description it will easily be seen that, as already said, the yield depends on the proportion of quartz and killas quarried with the ore, and also, in part, on the section of the lode whence the mineral quarried is derived. As it is necessary, as a rule, for the safe and proper working of the mine to take out the entire lode, whether consisting of ore, quartz, or killas, the proportions will constantly vary, but taken through a long series of years the yield of the entire mass has not varied to any great extent. From the figures given in the report it will be seen that the yield of gold per ton on the whole quantity of mineral raised from the mine for the last two years has been much the same—about 7 oitavas per ton; rather larger during the last than during the preceding year. The exceptionally large yield of 1875 and 1876 was owing entirely to the mineral having been taken almost entirely from the rich part of the mine, and to a large quantity of quartz and killas having been left unquarried on each side against the walls. During these four years the whole (practically speaking) of the mineral quarried has been stamped. Now, if we go back to the years before the fire the average yield of the whole quantity extracted from the mine for the six years preceding it was 5¼ oits. per ton, the maximum being 5·9, and the minimum 4·8. It might be argued from these figures that the lode is improving in its gold-bearing properties as depth is attained, but I rather incline to the belief that the true solution of the matter is that formerly a larger proportion of killas and quartz were quarried; and, as supporting this belief, I state it as a fact that on the old mine the lode was excavated at a greater length than has been as yet attained, and that both extreme ends were prolific in quartz and killas. In these remarks I have dealt entirely with the yield per ton of the whole mass of mineral extracted from the mine. The yield per ton treated can, of course, always be increased by rejecting poor stone, and this was done largely during some years previous to the fire, notably in 1866. I now come to the consideration of the loss of gold in treatment, which we think excessive, and requires strenuous efforts to remedy. We tell you in the report that with this view we have enlarged the European staff in the reduction department, and that additional appliances have been erected for the re-treatment of the refuse. It is too early as yet to judge of the probable benefit that may be derived from such outlay, but one fact is ascertained—that by the use of machinery the pyrites with which the gold is associated can be easily separated from the earthy matter, and thereby concentrated up to three or four times the original gold contents of the refuse, thus affording a better prospect of recovering the gold therefrom. In this process, too, it appears that no free gold can be discovered on the frames, the whole being apparently in combination with the pyrites. As regards the Cuiaba property, you will have read, no doubt, with satisfaction the superintendent's and Mr. Dale's reports thereon. They necessarily are silent, except as to hearsay reports, as to the value of the lode where it has been hitherto worked on. Some assays have been made of mineral found on the surface, said to have been taken from Brown level, but such evidence of the value of the whole body of lode is very unreliable. The stamping mill purchased with the property is being put in repair, and will be ready to be put in motion, it is expected, as soon as the lode is reached by Brown's adit, which it is estimated will be in about four months. This mill will be capable of reducing some 300 tons of mineral a month, and will, therefore, afford an early opportunity of proving the value of the lode. If satisfactory the deep adit referred to by Mr. Dale will be undertaken, and whilst in progress an ample supply of mineral for the stamps we can erect can be cheaply brought out by Brown's level. The lode is large, and the expense of quarrying it and bringing it to surface will be trifling as compared with the same operations at Morro Velho. The water-power is equal to driving 100 heads of stamps, as at present brought on to the property. It can be increased, if necessary, hereafter, and you will see that Mr. Dale, who has made a survey of the property, reports that the supply of timber of moderate size can be obtained from the company's woods, which will, probably, be sufficient for the requirements of the establishment for some years to come, though large logs are scare and difficult of access. I need not detain you by commenting on the financial position of the company. The remittance due in July will enable us to pay all liabilities up to August, and leave a handsome balance at the bankers. We have now a reserve fund of 54,000*l.*, besides about 5000*l.* of unexpended capital applicable to the preliminary work at Cuiaba. (Cheers.)

Mr. BRAND called attention to the statement in the report that under existing arrangements the unrecovered gold contents of the ores are not less than 3 oitavas for every ton of ore stamped, representing a money value of over 80,0.0*l.* Now, he thought this was a point which ought seriously to be looked to. In Australia and California ore containing 3 oits, per ton was looked upon as fairly profitable for working. Referring to the Cuiaba property, he drew attention to what he considered a discrepancy in the report of Mr. Henry Dale, one paragraph stating that the lode would be reached in about 18 fathoms driving, whilst in another paragraph it was stated that the length of the deep adit to intersect the lode would be about 250 fathoms.

A SHAREHOLDER suggested that a sample of the sand which had been treated should be sent over to England, with the view of seeing by better treatment a greater percentage of ore could not be extracted.

The CHAIRMAN said that instructions had been sent to Morro Velho to send some of it home. With regard to the last question of Mr. Brand, he pointed out that in the first paragraph it stated that to repair and continue the extension of Brown's adit in a direct line until the lode was reached would probably be in about 18 fms. driving, but in the other paragraph reference was made to a deep adit above the horizon of the main rego, the length of which, in order to intersect the lode, would be about 250 fms. He read the paragraph in the report bearing on the point. As regarded the loss of gold, the directors were as much distressed and perplexed as any of the shareholders. It was an old story to go back to. The directors were taking every means to recover the loss. New machinery has been put up, so that they could separate the pyrites from the earthy matter. They meant to have some of the stuff over to try it in England, and if the present officers could not manage it the directors would send someone who would try other means. As regarded 3 or 4 oits. being considered a profitable percentage in Australian and Californian ores, they must bear in mind that the ore from which it was extracted was entirely different. In Australia the gold could easily be washed out, whereas at the St. John del Rey they had difficult pyrites to deal with. They must also make allowance for the officers there; it would take time and a considerable amount of trial and experiment before they could succeed.

Mr. WILD said he could corroborate the Chairman's statement regarding the difference in the ores. The man who could easily extract gold from pyrites had only to go to Wales and make a fortune.

Mr. TENDRON said that the reduction officer was a most efficient man, and was doing all he could to remedy the state of things, which he pronounced to be discreditable and painful to all concerned.——The report was then adopted.

A dividend of 17½ per cent. on the capital stock of the company was then declared, payable on and after the 27th.

Mr. G. F. Dickinson was then re-elected a director, and Mr. Spencer Herapath auditor.

On the motion of Sir JOHN SWINBURNE, Bart., seconded by Mr. J. P. GUY, a cordial vote of thanks was then passed to the Chairman and board, and a similar compliment paid to the superintendent and staff at the mine. The meeting then broke up.

NEW QUEBRADA COMPANY.

The adjourned general meeting of shareholders of this company was held at the Cannon-street Hotel, on Thursday,

Mr. N. LEAROYD in the chair.

Mr. N. G. BURCH, the secretary, read the notice convening the meeting.

The CHAIRMAN said this was an adjournment of the general meeting which was held on May 30 last. At that meeting, after he had given explanations as to the position and circumstances of the company, and the report and balance-sheet had been adopted, the shareholders were good enough, on the invitation of the directors, to appoint a committee to confer with the directors upon several subjects which had been mentioned in the report. That committee comprised a number of the most influential and well-known members of the proprietors, and they had had the advantage since then of frequent consultation, and the several subjects on which they had been appointed to confer had been fully considered and discussed. A number of proposals had been made, one being the amalgamation of this company with the Bolivar Railway Company, and the other, as an alternative, the continuation and prolongation, and in some respects the modification, of the existing working agreements between this company and the Bolivar Railway Company. These proposals, the former of which was preferred by the committee and by the board, had been submitted to the Bolivar Railway Company, and those who were financially interested in the company, and the answer which had been given to the committee and the board was this:—"A new mining superintendent has just been sent out—a man of experience, in whom the Quebrada Company, and their consulting engineer, and also, as far as they had had anything to do with it, the Bolivar Company very highly approved of; he has commenced there a very thorough examination of the mine, and in some respects a further exploration of it. As yet we have no definite report from him; we have a favourable anticipation of what that report will be, but as yet his examination is incomplete." Therefore the Bolivar Company said—"It seems to us to be premature to enter into any permanent arrangement either for the amalgamation of the companies or for their joint working, and we ask you to to allow us to defer, any definite reply to your proposals until we have had a further opportunity of ascertaining what the mines are." They went on to say—"Let this continue, at any rate to the end of the year, and you may rely upon our sustaining you as far as may be necessary financially during the interval, but we prefer not to commit ourselves to any arrangement until we have further information and evidence as to what the mines are really to become." The board had been unable to elicit any more definite reply than that, and he thought that the shareholders ought to be satisfied with it. At any rate the board were unable to submit anything further than that. Their friends also had said this: "We are prepared to sustain you during the interval in which we ask you to postpone definite arrangements; but we do ask that if we are to supply moneys for carrying on the company we

shall have a larger measure of control than we have yet had in its management and direction, therefore we shall ask that some additions be made to the board which will secure to us the sort of control which we desire." Now, both the board and the committee thought the shareholders should avail themselves of this reasonable request, and the board were prepared, to the utmost extent possible, to give effect to what was wished. Those who found the moneys for the company's operations ought certainly to have some control in its direction and management. What the directors now asked the shareholders to do to-day was to complete the business which was left uncompleted at their previous meeting—namely, to appoint directors in the place of those who retired, and to appoint an auditor, and then to go home conscious that the prospects were more cheering than a month ago. There was just one other observation he ought to make. It might be necessary during the interval to enter upon advanced exploratory works, and it might be necessary to provide for reduction works, and although he anticipated that the income during the interval would be sufficient to provide for their ordinary expenditure, yet if these additional works were entered upon it would be necessary to borrow money, and he would, therefore, propose to ask the shareholders to empower the board to raise further sums of money not exceeding 20,000*l.*, and give such security as might be necessary. He had no other proposal beyond that except to tenderon behalf of the board and the shareholders their hearty thanks to the committee for their very valuable services, which had been very faithful and constant, although as yet they had resulted in nothing very definite.

Mr. HOLMES said he wished to make a few remarks.

A SHAREHOLDER: Are you a member of the committee?—Mr. HOLMES: No; He thought the directors had not kept faith with the shareholders in this matter. He had expected all along that they would have been furnished with a report from the committee, but none was provided, nor had the Chairman told them definitely what the financial arrangements were, nor what were the terms upon which the board was going to borrow 20,000*l.*

The CHAIRMAN said he was not quite sure that he had made himself understood. In the first place the statement which he had made to them was the result of the conjoint deliberations of the committee and the board. It had been thought that he might in his observations inform the shareholders the result of their consultations, and that it was, therefore, unnecessary there should be any formal report on the part of the committee, who would be able to add any explanation if they thought it necessary to do so. The members of the committee were present, and Mr. Ward (their Chairman) would if we pleased mention anything which he (the Chairman) might have omitted, or offer any explanation. With respect to the question of Mr. Holmes as to their financial arrangements he had already said that he anticipated the income of the company during the interval would be sufficient to provide for the ordinary expenditure, but that if they were to enter upon any new works it might be necessary to raise further moneys, and that they (the directors) ought to be in a position to give the best security which the circumstances of the company, and the powers of the board, authorised by the shareholders would enable them to offer, for any moneys which it might be to the interests of the company to borrow.

Mr. LEWIN said, as one of the committee, it might, perhaps, be desirable that he should express his entire concurrence in what the Chairman had already said.

Mr. J. C. BOULTON said he understood from the Chairman's remarks that the company's income was not sufficient to pay its expenses; secondly, that the Bolivar Railway Company was to act as their bankers, and find the money; and, thirdly, that this company was going to borrow a sum of 20,000*l.*

The CHAIRMAN in reply said he was not aware from what observations those inferences could be drawn—he intended nothing of the kind.

Mr. HOLMES had understood the Chairman to say that the board wanted powers to borrow 20,000*l.*

The CHAIRMAN said he would again try to explain the matter. In the report issued to the shareholders for the ordinary meeting, which was adjourned to that date, it was stated that the directors had in contemplation the erection of reduction works, and also considerable exploratory works, and that it might be found necessary to ask the shareholders to provide them with the moneys, or to give the board authority to give securities for the raising of the funds, if necessary. All he asked them to do at that meeting was what they were asked to do at the meeting of which that was an adjournment. Of course, it might not be necessary to borrow the money, but in case they should find it desirable to do so it was only right that the directors should be able to give the best securities they could for these moneys. (Hear, hear.)

Mr. HOLMES asked if the shareholders would be asked to advance this money?

The CHAIRMAN replied that they had not been asked at present.

Mr. HOLMES asked how many shareholders there were in the company?—The CHAIRMAN, in reply, said they had from 500 to 600.

Mr. HOLMES thought an appeal should have been made to the shareholders to advance the money.

The CHAIRMAN said the shareholders appointed a committee, in which they had or had not confidence. This committee had been able to go into details, reasons, and considerations which the shareholders had not. The gentlemen who formed the committee were the pick of the proprietary, and he had given the meeting the result of their deliberations. Mr. Ward was present, and would, perhaps, supplement what he (the Chairman) had already stated.

Mr. F. PETERSON WARD said it had been agreed on all hands that the Chairman should be authorised to express the views of the joint committee. He might venture to assure the shareholders that the committee had discharged their duties most zealously in the interests of the company, and though they had not succeeded in obtaining all that some of them desired, he thought a satisfactory basis had been laid, and the matter was, so far, simply deferred. He would ask them, in the interest of the company, to accept the statement made by the Chairman, without pressing their enquiries any further at present. He, for one, was most ready, and rather anxious than otherwise, to explain all that had been done by the committee, but he did not think it would be prudent to do so at the present time. They had better receive the statement made by the Chairman, for he thought they might congratulate themselves on the result of their deliberations, although the result might not be all they desired.

A SHAREHOLDER asked if the new engineer was known personally to Mr. Darlington?—Mr. DARLINGTON replied that he had every confidence in Mr. Holman, who had recently been appointed superintendent.

Mr. BOWYER supposed that it was not intended that the new directors, whoever they might be, should have the sole control of the management of the company. Since the year 1873 a sum of 108,000*l.* had been expended by the company in the development of these mines, and he had asked at the last meeting how that amount had been expended, what the results were, and what they had to show for the expenditure. He thought the committee should have gone into this point, and seen how the money had been spent. If the committee had been able to give them any information on that subject the shareholders would have been pleased to receive it. He did not know whether they had confined themselves to one point only. Then as to the proposed amalgamation with the Bolivar Railway Company, over and over again it had been stated by the board and by two or three of its directors—Mr. Hemming, Colonel Strange in his time, and subsequently by the present chairman of the company—that this company had no power to make a line from San Felipe to Palma Sola, that they were a mining company, and that according to the Articles of Association they had only to do with the development of the mine—it did not include the development of the State of Venezuela. Palma Sola was on the very banks of the Aroa, but on the other side of the river. The greater part of the property, he believed, belonged to Mr. Bird, but this company had not the power to develope it. He wished to know if they were going to advance money to make a railway or a road from San Felipe to Palma Sola. If they did it would be *ultra vires*, and not in accordance with the Articles of Association. It might be that this could be done by an arrangement with the Bolivar Railway Company, but as the company was at present constituted they could do nothing whatever with works outside the object of their company, and that they could not spend a single farthing in making or working a road or railway from San Felipe to Palma Sola, or, indeed, upon anything other than the development of the mine. If they did this they would get into trouble, and would contravene the law. They were also asked to agree to accept, in conjunction with the Bolivar Railway Company, these concessions, but he contended that they had no right to spend money on those concessions. If they amalgamated with the Bolivar Railway Company it might, of course, be a different arrangement.

The CHAIRMAN expressed his regret that the speech just delivered by Mr. Bowyer had not been delivered on the occasion for which it was prepared—probably for a much earlier meeting of the company. He was not aware that the company had in contemplation the making of a railway, or that the subject was introduced into their report in any way. (Hear, hear.) He was not aware that the committee had been considering this matter in any way whatever. Then as to the question of law.

Mr. BOWYER said the Chairman was a lawyer, and he had expressed his opinion that this would be *ultra vires*.

The CHAIRMAN replied that he was of that opinion still, and had never wavered in it. If the question were before them that they should construct a railway from Palma Sola to the moon it would be quite as relevant to their business as the remarks of Mr. Bowyer.

Mr. BOULTON asked if any information could be given as to the value of the ore coming forward, and whether it showed a better percentage than previously?

The CHAIRMAN said that was really a matter they had something to with, but just for the moment the proposal before the meeting was that the committee should be thanked for their valuable services.

Mr. VAN RAALTE seconded the motion, which was carried unanimously.

Mr. WARD proposed the re-election of Mr. Learoyd as a director. Mr. Learoyd's ability was evident, and his legal knowledge and his assiduity were most valuable to the company.—Mr. BOULTON seconded the motion, remarking that he believed the Chairman to be the right man in the right place.

On the motion of Mr. WARD, seconded by Mr. HOLMES, Mr. James Anderson was re-elected a director.

In returning thanks for his re election, and for that of his colleague, Mr. Anderson, the CHAIRMAN said their duty at present was not of the most pleasant character. It would be much more interesting if they could talk about the amount of dividend they were going to declare, but he thought under the circumstances they had, perhaps, the more right to ask the shareholders for their sympathy and support while they were struggling with difficulties which they were not more responsible for creating than they were able at that moment to avert. He believed all would come right some day, and that they would be able to congratulate each other on the success of the company.

Mr. HOLMES: You said something about strengthening the board.

The CHAIRMAN said he would tell the meeting exactly what was in their minds. They had repeatedly invited their friends with whom they were associated financially to nominate for election to the board of this company some member of their house, or some friends in whose business or mining capacities they would have confidence, and they had assured the firm that they would elect their nominees with the greatest pleasure. They had now promised to make some nominations, but they had not yet been able to give the directors the names of the gentlemen they would propose. The shareholders might, however, expect to hear that such addition had been made to the board. He had no further information on the subject, or he would be very happy to give it.

The CHAIRMAN, in reply to a question from Mr. BOWYER, said not knowing the gentlemen who where to be proposed he would have some difficulty in describing their capabilities. At present there were five directors on the board, but the Articles of Association provided for nine. The Bolivar Railway Company could not have more than two representatives at the board of this company.

Mr. RITCHIE, as one of the committee, said he did not think they would be likely to get the money which would probably be required from the shareholders. He was of opinion that they should have a thorough survey made of their mines as soon as possible, for they had not had a good survey made yet. All they had had was the explorations of old workings, very many of which were exhausted, and very little had been done to determine what the mine was really worth. It would probably take two or three months to make such a report, but he thought it would be well worth while to have it made. Mr. Ritchie also advocated the publication, either in the *Mining Journal* or by circular, of the monthly reports from the superintendent, or, at at all events, an abstract of the news received.

Mr. BOULTON said other mines did that, for instance the Sierra Buttes, the Frontino and Bolivia, and the Scottish Australian.

The CHAIRMAN, in reply to a question as to what concessions the company had obtained for the payment of 5500*l.*, said the remissions were for a good many export and import duties, for privileges with respect to the working of the mines, and from harbour dues and other matters of importance to the company. With respect to the cargoes, two of them were on their way home, one containing 18 per cent. wet assay, and the other 15½ per cent. wet assay. (Very good indeed.) The superintendent had not yet had time to make a full report, but this would follow in due course. Since an assayer had been sent out to the mines all the anticipations of the yield had been realised almost to the letter. (Hear, hear.)

On the motion of Mr. HOLMES, the retiring auditor, Mr. H. J. Whaley, was reappointed.

The CHAIRMAN then said he would ask the meeting to pass a resolution in the following general terms:—"That the board of directors be authorised, if they find it necessary to do so, to raise for the purposes of the company such further sums not exceeding 20,000*l.*, and to give security for the same as best they may be able to on the property of the company."—Mr. J. THOMPSON seconded the resolution, which was thereupon passed.

Mr. VAN RAALTE thought the shareholders should have an opportunity of advancing the money required *pro rata* to their holdings.

The CHAIRMAN had no hesitation in saying that no mortgages or debentures would be issued without giving the shareholders an opportunity of subscribing. The Chairman also stated that the directors had no objection to publish the intelligence from the mines, and this subject would have their attention.

On the motion of Mr. WARD, a vote of thanks was passed to the Chairman and directors, and the proceedings then terminated.

THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

During the past week business has been restricted on account of the uncertainty of the result of the Congress, as well as the fortnightly settlement intervening, but transactions are now being entered into for next account—July 16. Particulars of the business done on Continuation day are given below. It is still the general opinion that peace will be attained by the Congress, and if this turns out correct the recovery of confidence which has set in will make great progress as it becomes better understood. It is noticeable the money market is hardening, entirely owing to exceptionally heavy withdrawals of gold for Paris, and the rate has today been advanced to 3 per cent, from 2½ per cent., at which it was fixed on May 30.

In shares of iron and coal concerns there has been some demand for Bilson and Crump Meadow on a statement that they have compromised with Mr. Alfred Goold's execution for 10,000*l.* cash, 10,000*l.* in debentures, and 2500*l.* in shares. They have also claims against several parties yet to be settled, from which the company ought to receive a large sum, Benhares are 2s. 6d. lower, while Monkland have advanced 1s. 6d. Bilbao are at 25½. Bolckow, Vaughan, A, 54 to 55; ditto B, 53⅞. Bilson and Crump Meadow, 5. Cardiff and Swansea, 14s. to 20s. Cairntable, 7½ to 8. Charles Cammell and Co., 10½ dis. Chapel House, 57s. 6d. to 62s. 6d. Ebbw Vale, 7¼ to 8. John Brown and Co., 12½ dis. J. and G. Wells, 7½ dis. New Sharlston (Preference), 3 to 4. Pelsall, 14 dis. Scottish Australian, 32s. 6d. to 37s. 6d. Sheepbridge, 1*l.* 8s. 9d.; ditto 5 per cent. debentures, 97½. Thorp's Gawber Hall, 40s. to 60s. West Mostyn (Preference), 17s.

Shares of foreign copper and lead companies are well supported. Rio Tinto 5 per cents. have advanced 12s. 6d., Tharsis 7s. 6d., and Rio Tinto shares 2s. 6d., but Cape are 17s. 6d., and Huntington 3s., both lower. The Kapunda Company's report again shows very disappointing results, and the lessees, apparently thoroughly discouraged, have thrown up the venture. The cost of producing the copper has been 68*l.* per ton, while only 55*l.* has been realised on its sale in the colony. Unless there is a reasonable prospect of doing better than this in future shareholders should agree to the special resolution which will be proposed at the meeting on July 1 for voluntarily winding up the concern. This course, if judiciously carried out, is preferable to any uncertain further operations, which might only result in the useless expenditure of the 2s. per share remaining uncalled. Cape are at 32 to 33; English and Australian, 30s.; Hultafall, 75s.; Hornachos, 13½ to 14¼; New Quebrada, 45s.; Panulcillo, 20s.; Rio Tinto 5 per cent., 65; Yorke Peninsula, 5s. to 7s. 6d.

There is little alteration in shares of home mines. The sale by the Glasgow Caradon Company on June 20, computed 230 tons copper ore, realised 909*l.* 5s. 6d., or an average of fully 79s. per ton, and compares with 240 tons at 99s. 9d. last month, while the sales in the month of June for some years past have been:—In 1877, 250 tons at 83s. 5d.; in 1876, 260 tons at 102s. 3d.; in 1875, 250 tons at 92s. 2d.; and in 1874, 240 tons at 115s. 8d. The half of the company's financial year is now past, and the total of the six months, as compared with the sales in the same period of 1877, shows a decrease of 1331*l.* 12s. In regard to Leadhills, it is doubtful if they will be able to pay dividends with the present state of the lead market, and in any case it is not likely the shares will be much dealt in till lead improves. Aberdaunant are at 8s. 6d. Bedford United, 3s. 9d. Bodidris, ⅞ to 1. Bluehills, 12s. 6d. Bampfylde, 5s. Carn Brea, 40½. Cargoll, 17s. 6d. Cook's Kitchen, 25s. Deep Level, 4 to 5. Dolcoath, 29. Devon Consols, 57s. 6d. East Caradon, 8s. 9d. East Pool, 9⅜. Gawton United, 8s. 9d. Herodsfoot, 5¼. Hingston, 8s. 9d. Melanear, 80s. Marke Valley, 13s. 9d. New Cook's Kitchen, 25s. Pandora, 12s. 6d. to 15s. Pateley Bridge, 15s. Penstruthal, 3s. 9d. Phœnix United, 2¾. Prince of Wales, 7½d. Rhosesmor, 40s. to 50s. Rhyd Alyn, 30½. Rookhope, 17s. 6d. South Roman Gravels, 3s. 9d. South Caradon, 61¼. South Condurrow, 11½. South Crofty, 7¾. South Frances, 57s. 6d. Tincroft, 10½. West Tankerville, ⅜ to ½. West Basset, 17s. 6d. West Chiverton, 8¾. West Seton, 14½. West Tolgus, 6½. West Frances, 2⅞. Wheal Basset, 2½. Wheal Crebor, 11s. 3d. Wheal Grenville, 3½. Wheal Agar, 4½. Wheal Seton, 13½. Wheal Kitty, ⅞. Wheal Peevor, 6¼. Wheal Uny, 21s. 3d.

In shares of gold and silver mines the principal dealings have been in Colorado and Richmond, which are both tending downwards. This week's run of Richmond is $10,000 better, at $73,000. The late meeting of the company appears to have been a most remarkable one for length. The profits for the past three months were 82,000*l.*, or more than cent. per cent. per annum on the share capital of 270,000*l.* If we understand the explanations aright, the continuance of this profit depends upon explorations, as the chambers now being worked cannot surely last very long at that rate; hence, with no great ore reserves, the importance of building up a strong reserve fund is unquestionable, and the scheme proposed for dealing with the 139,000*l.* profits on hand is the right one. The proposal is to issue a 5*l.* share gratis to present holders in the proportion of one new share for every two held. This would increase the capital by 135,000*l.*, but it may be pointed out that this should not lessen the rate of dividend paid, for they could pay much more than they do at present; as the Chairman put it, instead of paying 7s. 6d. per share quarterly, the present profits would easily pay 7s. 6d. per share monthly. The other great foreign mine—St. John del Rey—has a capital of 253,000*l.*, and the profits of last year afford a dividend of 35 per cent. on this, besides increasing the reserve to 54,279*l.*, and carrying forward a balance larger by 2734*l.* than that brought into the account. Their produce for the year was 485,705 oits., an increase of 45,903 oits., and the superintendent reports the present indications and reserves warrant the hope of continuous and fair returns for years to come. Capital reports are being received from the Colorado United Mines, some of the mineral assaying as much as 1800 ozs. of silver per ton, and for one week the ore sales were $4925. South Aurora shares in better request, owing to the success of the reconstruction scheme. The produce of St. John del Rey for the first division of June is 9800 oits. (381*l.*), and that of Don Pedro 300 oits. Sinking has been resumed at the latter. For May, Almada and Tirito has a profit of $2000, under unfavourable conditions. For April, Frontino and Bolivia a profit of 702*l.*, and Antioquia a loss of 86*l.* Australasian mines are at 8s. Birdseye Creek, 15s. to 20s. Chontales, 12s. 6d. Cedar Creek, 5s. 6d. Eberhardt, 6⅞. Emma, 2s. 6d. Exchequer, 2s. Don Pedro, 12s. 6d. Flagstaff, 16s. 3d. Gold Run, 6s. to 7s. Javali, 8s. Last Chance, 27s. 6d. Santa Barbara, 2s. United Mexican, 70s.

Shares of oil companies' unaltered, beyond a fall of 2s. 6d. on Uphall. Young's Paraffin are now ex div. Price's Patent Candle at 10½.

Dealings in miscellaneous companies shares are almost at a stand. Scottish Wagon have been sold 1s. 3d. cheaper. Phospho-Guana are now ex div. Chemical Companies' shares are in request, but scarce, particularly Liwe's 7 per cent. (pref.) Langdales are 9⅛. 9d.; Lawes, 8; and Newcastle, 20s. to 25s. Though trade is so bad it must not be forgot that prospects point to better harvests, which will, of course, give the farmers more money to deal with the chemical companies.

The property of the new mining company referred to lately is situated about 1½ mile from the town of Holywell, and is in the same lead-bearing stratum as all the rich mines of Flint and Denbighshire. The lodes of the Milwr Mine pass through it, and have yielded as much as 600 tons of lead per month, as well as other parallel and cross lodes which have been rich in adjoining mines. There is probably no other such sett could be had on like favourable terms, besides it is about five times as extensive as most of the mines in the neighbourhood (600 acres). As a very limited capital will open it up to make it a very valuable mine the company to work it will be a very small and almost private one.

HALKYN DISTRICT DRAINAGE SCHEME.—These works are a safe speculation, and likely to develope such a fine field for mining enterprise as will direct more attention to the profits of home mining than anything that has occurred for the last ten years. The engineers are strongly of opinion that the water at Rhydymdyn, Rhosesmor, Deep Level, &c., has all the same reservoir, and this opinion is agreed on also by all the practical miners of the district. At Tydyn-y-Gwynt Mine, more than a mile south or Rhosesmor, and touching the northern boundary of Rhyd Alyn, they were actually drowned out a few hours after the engine at Rhosesmor stopped, and they have never since been able to touch the lode, though working it a whimsey all the time the Rhosesmor engine kept the water down. This would seem to conclusively prove that the unwatering of one of the mines only is necessary to clear out all the others also. In the last-named little mine 12 tons were sold from a new lode last month, and left a fair profit, after providing for further explorations.

DEEP LEVEL.—The shares of this mine are very well held at 4 to 5, as it is expected they will be 10 very shortly. The company has an extensive tract of land in which many rich lodes have been found, and tens of thousands tons of lead got, and it is quite possible there are yet large deposits of lead to be discovered when the mines are unwatered.

RHOSESMOR.—Shares of this mine are in good demand, and there will soon be none for sale under 3*l.* Holders are inclined to retain them until it is seen whether or not the mine is to be drained, as a further rise would probably then take place. Even at present many holders would not sell at a good premium, as there is probably no speculation equal to this in home mines at present in the market. The shares are bound to rise, as the Halkin Deep Level approaches the sett, the unwatering of which it is supposed will be effected in less than four months now, while others think it is not likely to be drained this year. The sett is yet fully ⅓ mile in advance of the drainage tunnel; however, shares are good to buy, as the mine is very rich in the bottom, and when drained may possibly produce 250 tons of lead per month.

RHYD ALYN.—These shares are very sparingly offered. The mine is now being worked by means of a few tributers in an adit level, simply because the development of their new lode will not enable them to do more unless at a great waste until they have got further eastward. A small profit is being made on the returns of ore—namely, 15 tons per month, as the men are working at low wages. The sett, which is a fair speculation, has, owing to want of capital, not been hitherto worked systematically, but many of the shares have of late passed into better hands, and the chief holder is one of the wealthiest men in North Wales. The mine was in 1000 shares, but it is just being registered under the Limited Liability Acts, and for each of these original shares the holder is to get six of the new 5*l.* fully paid shares the limited liability company is to consist of. The capital will be 40,000*l.*, with a reserve for future capital of 10,000*l.* It is not expected the 5*l.* shares of the limited company will be obtainable under 6*l.* each. It has been said this mine is not so good a speculation as the rest, but it appears to be even better. They are gradually opening up an entirely new mine, above water level, on a parallel lode to those formerly worked, and though it is rather far west just now for great discoveries, it is steadily progressing to the measures eastwards. The value of the mines is proved by the proposed scheme of the Drainage Company actually terminating in the unwatering of those mines, for it is not to be supposed that the engineers would take works where no return is likely to be got out of them, or that they would make such a mistake as to drive a tunnel two miles to these mines and after all not uncover the lead ground by 120 yards deep of water. The promoters of the drainage scheme well know the riches that will be uncovered in these mines, and some cautious people, not accustomed to exaggerate, say that the sett will yet be worth half a million sterling, for the promoters of the drainage scheme are not the people to stop working until it is made a complete success.

OLD GROSVENOR.—This mine is at present idle, and nothing has been done for the past year except by a few men occasionally. There is no lead in sight anywhere in the mine, but there are several good trials when capital is got.

GORSEDD AND MERLLYN.—This is a promising sett, but the deposit of ore, which some months since produced 50 tons per month, is said to have failed, and could not at present do more than 10 tons per month. The mine is now being sunk to a deeper level, with fair chances of success. The opinion, however, of one of great practical experience, who has thoroughly and often examined the mine, is that it will become the best mine ever found in Flintshire for the last 40 years; hence those who hold shares are inclined to stick to them, the more so as the mine has hitherto fulfilled all the expectations formed of it. It is not, however, certain whether their ore is in a true fissure lode, but it is said to be.

NORTH HENDRE.—This is one of the worst managed mines in Wales. Had it been otherwise double the profits that have been paid would have been realised. They are said to have a very rich stratified deposit of ore, not a regular fissure vein or lode. The so-called machinery is about the worst that could be found, according to rumour, as everything is kept very private at the mine, consequently they are believed to be at present broken down, and their principal engine, an old locomotive, is taken away to be repaired, and not likely to be returned for six weeks. Previous to this alleged break down the mine is stated to have failed very considerably, and not competent to produce a quarter of the late returns.

On Contango-day (Tuesday) the following were the rates of continuation current:—Contangoes: 9d. on Benhar Coal, 1d. on Glasgow Caradon, 1d. on Huntington, 1d. on Monkland, and 4½d., 6d. on Richmond.—Backwardations: 3d. on Tharsis, 3d. even on Uphall Oil, 3d., 6d. on Young's Paraffin. On comparing the making-up prices fixed to-day for the shares mentioned with those of the previous settlement the variations shown for the account are as under—Benhar have advanced 47s. 6d. per share, Richmond 13s. 9d., Uphall 12s. 9d., Monkland and Tharsis each 12s. 6d., Tharsis (new), 7s. 6d., Marbella 5s., Canadian Copper 1s., and Glasgow Caradon 6d. Glasgow Port Washington, Rio Tinto, Oakbank Oil, and Scottish Wagon (new) are all unaltered. Huntingtons have, however, declined 6s. 6d., Young's Paraffin 5s., Omoa and Cleland 2s., and Scottish Wagon 1s. 3d. It will be observed by this that the general tendency of prices has been decidedly upwards.

Reports are now prepared regarding the Errisbeg Mining Company, Limited (Ireland), Montezuma Mine (New Mexico), also Cleddau Valley Slate Quarries Company, Limited (Wales), but must be held over till next week.

Subjoined are this week's quotations, &c., of mining and metal shares quoted on the Scotch Stock Exchanges:—

Capital. Per share.	Paid up.	Dividends. Rate per cent. per annum. Previous.	Last.	Description of shares.	Last price.
				COAL, IRON, STEEL.	
£ 10	£8	£ 7	£ 7†	Arniston Coal (Limited)	7
10	10	4	4	Benhar Coal (Limited)	7⅛
100	50	22s6d‖	3s6d‖	Bolckow, Vaughan, and Co. (Lim.) A.	54½
10	10	10	10	Cairntable Gas Coal (Limited)	8
10	10	4s‖April, 1876		Chillington Iron (Limited)	60s.
25	20	10s‖Dec., 1874		Ebbw Vale Steel, Iron, and Coal (Lim.)	7⅞
10	6	nil	nil	Fife Coal (Limited)	70s.
10	10	nil	nil	Glasgow Port Washington Iron & Coal(L)	35s.
10	10	—	—	Ditto Prepaid	40s.
10	10	—	—	Lochore and Capledrae (Limited)	80s.
10	10	nil	3	Marbella Iron Ore (Limited)	55s.
10	10	nil	nil	Monkland Iron and Coal (Limited)	49s.
10	10	5	4	Ditto Guaranteed Preference	65s.
100	100	nil	nil	Nant-y-Glo & Blaina Ironworks pref. (L)	19
6	6	nil	nil	Omoa and Cleland Iron & Coal (L. & Red.)	10s.
1	1	15	15	Scottish Australian Mining (Limited)	37s. 6d.
1	10s.	15	15	Ditto New	18s.
Stock	100	nil	nil	Shotts Iron	91
				COPPER, SULPHUR, TIN.	
4	4	—	—	Canadian Copper and Sulphur (Lim.)	5s.
10	7	57⅛	25	Cape Copper (Limited)	3⅞
1	1	7¼	2½	Glasgow Caradon Copper Mining (Lim.)	2⅜
1	15s.	7½	2½	Ditto New	1⅝
10	9¾	nil	nil	Huntington Copper and Sulphur (Lim.)	25s.
25s.	23s.	—	—	Kapunda Mining (Limited)	1s.
4	4	—	—	Panulcillo Copper (Limited)	20s.
10	10	6†	6†	Rio Tinto (Limited)	85s.
20	20	7	7	Ditto, 7 per cent. Mortgage Bonds	15¾
100	100	5	5	Do. 5 p.ct. Mor. Deb. (Sp. Con. Bds.)	65
10	10	22½	20	Tharsis Copper and Sulphur (Limited)	24½
10	7	22½	20	Ditto New	16⅝
1	1	—	—	Yorke Peninsula Mining (Limited)	5s.
1	1	—	—	Ditto, 15 per cent. Guaranteed Pref.	20s.
				GOLD, SILVER.	
1	1	—	—	Australian Mines Investment (Limited).	8s.
5	5	7s. 6d‖	7s. 6d‖	Richmond Mining (Limited)	13⅝
				OIL.	
10	7	6	15	Dalmeny Oil (Limited)	8
1	1	7½	25	Oakbank Oil (Limited)	42s. 6d.
1	5s.	—	25	Ditto	12s.
10	10	7½	2	Uphall Mineral Oil (Limited) "A"	9½
10	10	—	—	Ditto "B" Deferred	10
10	10	—	—	West Calder Oil (Limited)	40s.
10	8½	17½	17½	Young's Paraffin Light & Mineral Oil (L).	15
				MISCELLANEOUS.	
50	25	5	6	London and Glasgow Engineering & Iron Shipbuilding (Limited)	24¾
7	7	15	10	Phospho Guano (Limited)	8*l.* 8s.
10	10	6	6	Scottish Wagon (Limited)	10*l.* 18s 9
10	4	6	6	Ditto New	52s. 6d.

† Interim. ‖ Per share.

NOTE.—The above lists of mines and auxiliary associations are as full as can be ascertained, Scotch companies only being inserted, or those in which Scotch investors are interested. In the event of any being omitted, and parties desiring a quotation for them and such information as can be ascertained from time to time to be inserted in these lists, they will be good enough to communicate the name of the company, with any other particulars as full as possible.

J. GRANT MACLEAN, Stock and Share Broker.

Post Office Buildings, Stirling, June 27.

PETROLEUM STOVES.—Messrs. WRIGHT and RANDLE, of Birmingham, construct the body of the stove square, and surmount it with a round cylinder. About 5 or 6 in. from the bottom they fix a metal plate, dividing the stove into two compartments, and in which plate is a suitable aperture for the flame or flames from the burners; this plate has in some cases an inner frame of iron or chimney surrounding the aperture for the flame or flames, and standing up from 3 to 5 in. above it. The oil vessel has the burner and the cone attached to the oil vessel with a hinge, so that it can readily be thrown back for trimming, and so on. They attach to the cone, and surrounding it on all sides, a short chimney of any suitable material standing up just above the cone to such a height as will when slid into its place just touch or very nearly so the under side of the plate which divides the cylinder, as before described, and thus almost entirely excludes all draught into the cylinder, except that which passes through the openings in the cone or cones. In order more effectually to do this they sometimes put also a frame on the under side of the plate, so that when the oil container with burner and cone is slid into its place this frame closely surrounds the short chimney attached to the cone on every side, except that on which it enters. They obtain the same result by attaching to the under side of the division plate a frame of the exact depth to bear upon the top of the cone plate, or of the exact width to closely encase the sides of the cone plate on its three sides when it is slidden into its place, and having the side or end at which the cone enters, this frame being on a hinge with, if desired, a counterweight, so that it is self-closing directly the oil vessel is in its proper place, and thus causing all, or nearly all, the air which enters the cylinder to pass through the opening in the cone or cones.

APPARATUS FOR THE DISTILLATION OF COAL.

Messrs. JAMES FORBES and JOHN ABBOTT, of Old Ford, have patented some improvements in apparatus used in the distillation of coal for the production of coke, tar, and ammoniacal liquor, and the utilisation of the resulting gases.

The objects of the invention are to extract from the coal the maximum quantity of tar and ammoniacal liquor, and to produce more economically a better quality of coke than when coal is distilled in the ordinary way, the resulting gas arising during this process being utilised for heating the retorts or ovens, which form the subject of the present invention. The retorts or ovens, which are made of fire-brick, are of a semi-circular or D-shaped form, about 3 ft. in breadth, about 12 or 15 in. high, and about 10 ft. long. [The dimensions are only approximate, as they may be varied to suit particular circumstances.] They may be set singly in brickwork, or a number of them may be set in a bench or row. Beneath each retort are fixed horizontally, parallel to the bottom of the retort, and about 6 in. therefrom, slabs of fire-clay. Between these slabs and the bottom of the retort are fixed two, three, ore more partitions, made also of fire-brick. The partitions extend to nearly the whole length of the resort, and divide the space beneath it into so many longitudinal chambers or continuous flues, each partition having an opening at one end, so as to admit of communication with the adjoining chambers. Beneath the slabs just spoken of another set of slabs are placed, also about 6 in. below the upper ones. The space between these slabs is divided in exactly the same manner as before described, with the exception that in this case the chambers or continuous flues are transverse, or at right angles to those immediately above them. The retorts or ovens are furnished with mouth-pieces and lids at one or both ends, similar to those employed for the production of gas, and there are attached either to one or both mouthpieces of each retort an ascension pipe leading to an hydraulic main. In connection with the main there is an exhauster for drawing off the gas from the retorts and forcing it through a condenser to extract the tar and ammoniacal liquor, and through a washer or scrubber to arrest the remaining ammonia. The gas is then passed on to a gas holder without further purification.

The mode of using the apparatus is as follows:—The retorts or ovens being charged with coals, gas is allowed to flow from the gas holder through suitable pipes to one end of the lowest series of chambers before described. When it reaches the other extremity of these chambers or flues, and is about entering the upper series, it is caused to combine with atmospheric air admitted through suitable orifices, and is lighted. The heat generated by the burning gas is soon sufficient to disengage from the coal in the retorts its gas, which, rising to the hydraulic main, is pumped away through the condenser and scrubber, and from thence into the gas holder to be conveyed beneath the retorts for distilling fresh coals. Thus a constant supply of gas is kept up, any excess being used for heating the vessels employed in manufacturing the tar and liquor into marketable commodities. When a fresh charge of coals is put in the retort it is desirable that the temperature to which the coal is subjected should be kept low until the whole of the tar is extracted, when the heat may be raised with advantage to the resulting coke. In practice it may be found desirable under some circumstances to have but one series of chambers beneath the retorts instead of two, the air being admitted at suitable openings placed at intervals. Arrangement is also made for the admission of air into the retorts when necessary.

PREPARING PEAT.

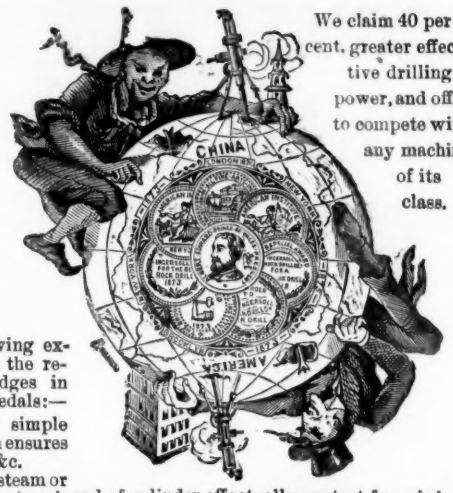
Mr. R. E. CORCORAN, of Ottawa, Canada, has patented some improvements in the mode or system of and in apparatus for preparing peat for use. [A communication from W. E. Wright, of Rome, New York.]—The invention consists in an apparatus and entire process for preparing peat from its original state in the bog. He commences by damming off a portion of the bog, if very wet, and then in all cases sinking a well in the same, into which all the water drains, and out of which it is pumped or syphoned away. Rails are laid on the ground below the peats, and wagons filled with peat by hand are taken to an incline and are drawn up into the works, preferably by a pulley on the machinery, and emptied on to the upper floor, from thence it is shovelled into a hopper, and examined at the same time for stones or other deleterious matters; thence it passes into a pugmill armed with strong blades, so that if a stone be embedded in the mass through negligence or design, it may by stopping the blades, throw the belt off instead of injuring the machinery below. From this it passes into the comminuting apparatus which, like the pugmill, can be of any of the numerous forms already known. The comminutor he prefers, however, consists of two spirally-grooved rollers, between which the peat is ground and squeezed out into the chamber at one end. From this it passes into a series of tubes, usually eight in number, each having a central pointed mandril so as to cause the peat to issue in the form of eight parallel tubes. Beneath this are trays on rollers, and on to these trays, following each other in succession, the peat passes from the spouts of the comminutor. The trays are of wire cloth, slats, or other porous or pervious material, and are pushed forward in the process till full, when they are lifted up to the wagons, the trays being piled up one over the other, with interspaces between, on open frame wagons, or otherwise. These wagons, while piling is going on, stand on a traverser or turntable wagon that runs on a line of rails at the end of a series of chambers, kilns, and open shedding forming the drying and the storing apparatus. The kilns are long and narrow, so as to accommodate, preferably, two lines of rails on a level with the traverser. The floors of these kilns are made of planks an inch or so apart, or other perforated material so as to admit the hot air through the floor. Beneath the floor, or to one side in each instance, is a reservoir or flue, into which the hot air is carried from a hot-air chamber round the boiler.

A series of diagonal joists or baffle plates are placed beneath the floor, so as to cause the heated air to be carried to the sides as well as the centre of the kiln. At the other end of the kilns is another traverser similar to the first for removing the wagons from the open sheding to one side of the kilns, into the kilns, or from the kilns into the storehouse at the other side. The wagons of wet peat trays are first brought to the open shedding, from thence being gradually pushed forward during the course of a day or two, they emerge at the other end of the rails, and are carried by the traverser to the kilns; through these they are placed, the entire kiln being filled at once. When fully dessicated they are passed into the store rooms at the end of the range kilns, unloaded, and wagons and trays used again for a fresh lot of material. The mode of heating and regulating the air in the chamber is peculiar. Besides the hot air sent in from below cold air is blown in above, and shields or baffle plates are hung over each wagon, so as to prevent the air having a free passage through. Some damp air is also drawn off from above by a fan passed in a pipe through the furnace to heat it, and injected below the furnace as a hot blast. At the opposite end to where the hot and cold air enters there is a chimney shaft for carrying off the damp air. The kilns are also heated in part by the smoke pipe, which runs through the kilns horizontally. There are also ventilators on the roof or sides opened at will. To economise everything he uses the exhaust steam by leading it up the smoke pipe, and also introduces steam from the boiler into the comminutor jacket. He makes a portion of the front plate of the fire-box double, so as to form a chamber for heating the feed water which is pumped therein.

HOLLOWAY'S PILLS AND OINTMENT.—When the summer's heat first becomes sensible, the liver is very apt to become temporarily irritated, congested, and deranged. This is in itself a very common cause of dangerous disease if it be not at once corrected by appropriate treatment. Holloway's ointment carefully rubbed into the region of the liver (under the right breast) acts like a charm in this respect, aided and assisted by the alterative properties of the pills, which must be taken at the same time internally. Pure and healthy bile is then poured out by the liver, and nature being aided, not counteracted, the symptoms are not simply temporarily removed, but are permanently eradicated. Much comfort will be produced by these remedies.

SOLID DRAWN BRASS BOILER TUBES
FOR LOCOMOTIVE AND MARINE BOILERS
EITHER
MUNTZ'S OR GREEN'S PROCESS
MUNTZ'S METAL COMPANY (LIMITED),
FRENCH WALLS,
NEAR BIRMINGHAM.

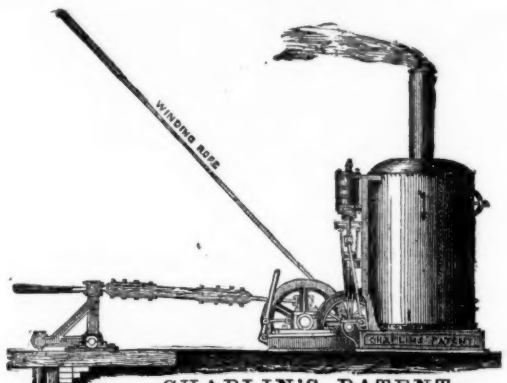
PATENT
"INGERSOLL ROCK DRILL,"
LE GROS, MAYNE, LEAVER, & CO.,
60, Queen Victoria Street, London, E.C.
5, PARK PLACE, NEW YORK, U.S.A.



We claim 40 per cent. greater effective drilling power, and offer to compete with any machine of its class.

The following extracts from the reports of Judges in awarding Medals:—
"2. Its simple construction ensures durability, &c.
"4.—The steam or air cushions at each end of cylinder effectually protect from injury
"5. Its having an automatic feed, giving it a steady motion, &c.
"6. Its greater steadiness and absence of jar and vibration experienced in other drills, which is very destructive to their working parts, &c.
"7. Its greater power is some FORTY PER CENT. in favour of the Ingersoll."
Medals awarded for several years in succession "For the reason that we adjudge it so important in its use and complete in its construction as to supplant every article previously used for accomplishing the same purpose."
Estimates given for Air Compressors and all kinds of Mining Machinery. Send for Illustrated Catalogues Price Lists, Testimonials, &c., as above.

Prize Medal—International Exhibition, 1862.



CHAPLIN'S PATENT
PORTABLE STEAM ENGINES
FOR PUMPING AND WINDING.
SPECIALLY ADAPTED for PITS, QUARRIES, &c.
SIMPLE and STRONG; require NO FOUNDATION or CHIMNEY STALK, and are EASILY ERECTED or REMOVED.
Sizes, from 2 to 30-horse power.
Steam Cranes, 1½ to 30 tons, for railways, wharves, &c.; hoist, lower, and turn round in either direction by steam.
Stationary Engines, 1 to 30-horse power, with without gearing.
Hoisting Engines, 2 to 30-horse power, with or without jib.
Contractors' Locomotives, 6 to 27-horse power.
Traction Engines, 6 to 27-horse power.
Ships' Engines, for winding, cooking, and distilling passed by H.M. Government for half water.
Steam Winches, Engines and Boilers for light screw and paddle steamers.
WIMSHURST, HOLLICK, & CO.,
ENGINEERS.
CITY OFFICES: 2, WALBROOK, LONDON, E.C.
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WIRE ROPES.
JOHN AND EDWIN WRIGHT,
PATENTEES, ESTABLISHED 1770.
MANUFACTURERS OF EVERY DESCRIPTION OF IMPROVED
Patent Round and Flat Wire Ropes,
From the very best quality of Charcoal and Patent Steel Wire. Galvanised Wire, Ropes for Ships' Rigging, Galvanised Signal and Fencing Strand, Copper Rope Lightning Conductors, Colliery Ropes and Steam Plough Ropes made from the best Patent Improved Steel Wire.
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Hemp, Flax, Engine Yarn, Cotton Waste, Tarpaulins, Oil Sheets, Brattice Cloth, Wagon Covers, &c., &c.
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UNIVERSE WORKS, GARRISON STREET, BIRMINGHAM.
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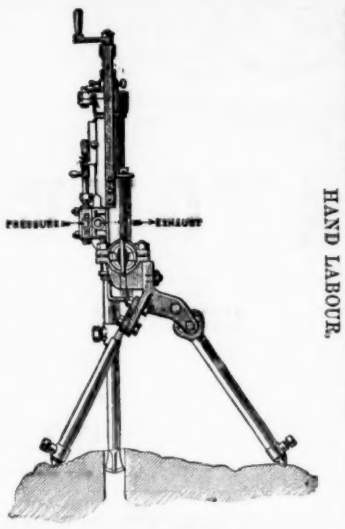
THE
"Cranston" Rock Drill

IS DRIVING LEVELS 200 LINEAR FEET PER MONTH IN HARD QUARTZ ROCK. "EBERHARDT" TUNNEL NOW DRIVEN IN OVER 3000 LINEAR FEET WITH THESE DRILLS AND COMPRESSORS.



CAN BE SEEN IN DAILY PRACTICAL OPERATION DRILLING 80 FEET OF BLAST HOLES PER DAY IN LIMESTONE ROCK AT ONE-FIFTH THE COST OF HAND LABOUR.

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HIGH BRIDGE WORKS,
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MANUFACTURERS OF EVERY DESCRIPTION OF
Engineering Fittings, Colliery Pump Working Barrels, Boiler Alarm Whistles, and Fire Engines.
IRON, COPPER, AND BRASS TUBING.
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MALLEABLE BRONZE PRICKERS & BLASTING APPLIANCES.
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1.—DAVY. 2.—STEPHENSON. 3.—CLANNY.
N.B.—The whole of these Lamps are made by workmen who have had grea experience, and pass through a careful examination before being sent out.
We also SUPPLY BRASS, COPPER, and COMPOSITION STEMMERS and PRICKERS, as embodied in the Mines Regulation Act, and made of such lengths best adapted for Mining purposes.

ASBESTOS.
A NEW and INDESTRUCTIBLE ASBESTOS PACKING for steam joints and glands, possesses an unusual power of resisting heat, works efficiently under the highest pressure of steam, being practically indestructible. Apply to—
THE PATENT ASBESTOS MANUFACTURE CO. (LIMITED),
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NICHOLLS MATHEWS, AND CO.
ENGINEERS, BRASS AND IRON FOUNDERS,
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CORNISH PUMPING, WINDING, AND STAMPING ENGINES; STEAM CAPSTANS AND CRUSHERS; WATER-WHEELS; PUMP-WORK; SHOVELS, AND HAMMERED IRON FORGINGS OF EVERY DESCRIPTION.
Also of SPUR, MORTICE, MITRE, BEVIL, and other WHEELS, of any diameter up to 12 feet, made by Scott's Patent Moulding Machine, without the aid of patterns, and with an accuracy unattainable by any other means.
MACHINERY or FOREIGN MINES carefully prepared.
SECONDHAND MINING MACHINERY, in good conditon, always on sale, at moderate prices.

BENNETTS' SAFETY FUSE WORKS
ROSKEAR, CAMBORNE, CORNWALL.
BLASTING FUSE FOR MINING AND ENGINEERING PURPOSES,
Suitable for wet or dry ground, and effective in Tropical or Polar Climates.
W. BENNETTS, having had many years experience as chief engineer with Messrs. Bickford, Smith, and Co., is now enabled to offer Fuse of every variety o his own manufacture, of best quality, and at moderate prices.
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ELECTRIC BELL SIGNALS FOR COLLIERIES, FACTORIES, WAREHOUSES, &c.,
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NEW SYSTEM—CAN BE RUNG AT ANY PART OF THE ROAD. Cheap, safe, and reliable. Efficiency guaranteed. LINES OF TELEGRAPH erected and maintained. LIGHTNING CONDUCTORS, &c.
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SYDNEY F. WALKER,
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COMMERCIAL BUILDINGS, LONG ROW NOTTINGHAM

PARIS INTERNATIONAL EXHIBITION, 1867.

VIENNA INTERNATIONAL EXHIBITION, 1873.

LONDON INTERNATIONAL EXHIBITION, 1874.

CORNWALL POLYTECHNIC SOCIETY, 1867 and 1873.

TANGYE BROTHERS AND HOLMAN,

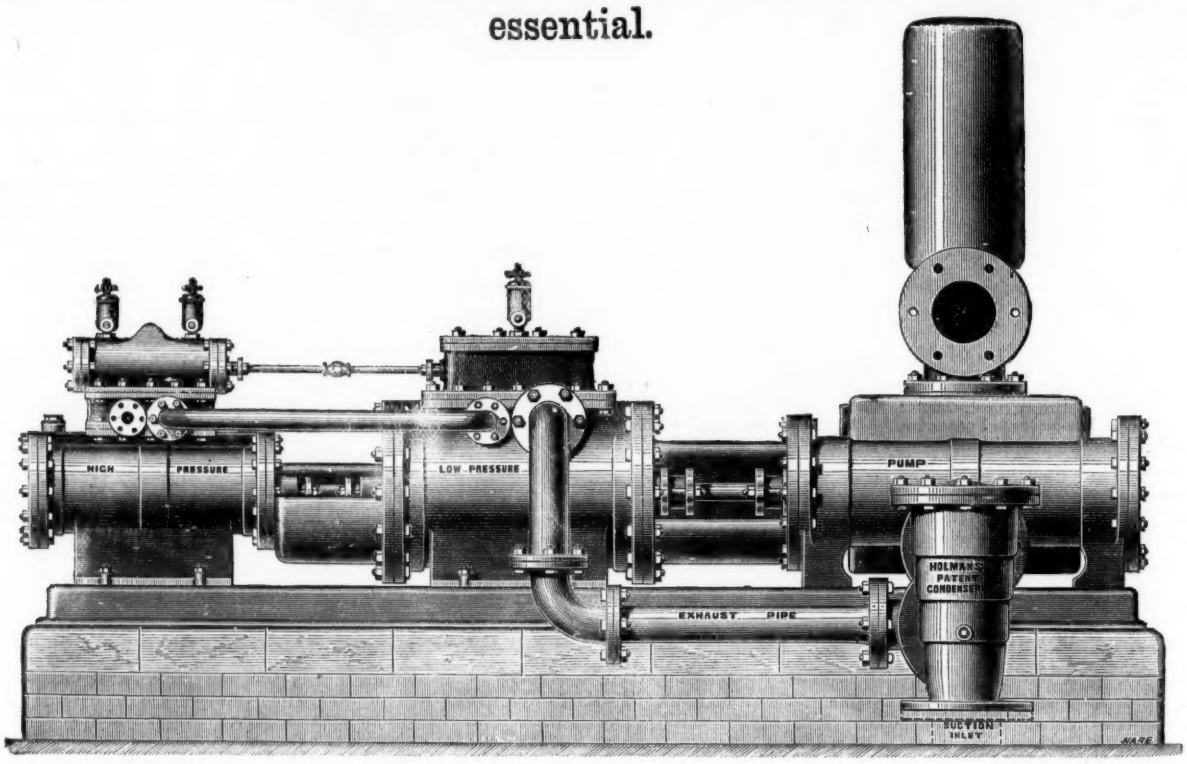
HYDRAULIC AND GENERAL ENGINEERS,

CORNWALL HOUSE, 35, QUEEN VICTORIA STREET, LONDON, E.C.,

AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

THE "SPECIAL" DIRECT-ACTING COMPOUND STEAM PUMPING ENGINE

For use in Mines, Water Works, Sewage Works, and all purposes where Economy of Fuel is essential.



After several years of successful application for all purposes to which steam-driven pumps can be applied, THE "SPECIAL" STEAM PUMP STILL MAINTAINS THE FIRST POSITION IN THE MARKET, notwithstanding that it alone—of all direct-acting pumps—has been subjected to the great variety of severe tests that must be encountered in such a period of time. Some valuable improvements have been suggested in the course of a long experience, and their adoption has rendered the apparatus at once

THE SIMPLEST AND MOST CERTAIN IN ACTION.

The illustration shows an extension of the principle of this Pump to a Compound Steam Pumping Engine, by which the economical advantages resulting from the expansion and condensation of steam are very simply and effectively obtained. The steam after leaving the high-pressure cylinder is received into and expanded in the low-pressure cylinder, and is thus used twice over before being exhausted into the condenser or atmosphere. The Engine combines simplicity, certainty of action, great compactness, fewness of parts, and consequent reduction in wear and tear.

Several thousands of the "Special" Steam Pumping Engines, with high-pressure cylinders only, are in use in British and Foreign Mines, Water Works, &c.,—and for confined situations, or where Engines of a comparatively small size only are necessary, they will still meet all requirements—but their application will be very largely increased, since it has been found practicable to embrace the important features of expanding and condensing the steam, so that increased power may be obtained, and the consumption of fuel greatly economised.

THE "SPECIAL" DIRECT-ACTING COMPOUND STEAM PUMPING ENGINE is the most simple appliance for deep mine draining and general purposes of pumping ever practically developed, and the first cost is very moderate compared with the method of raising water from great depths by a series of 40 to 50 fathom lifts. No costly engine-houses or massive foundations, no repetition of plunger lifts, ponderous connecting rods, or complication of pit-work are required, while they allow a clear shaft for hauling purposes.

SIZES AND PARTICULARS.

Diameter of High-pressure Cylinder	In.	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14
Ditto of Low-pressure Cylinder	In.	14	14	14	18	18	18	18	21	21	21	21	24	24	24	24
Ditto of Water Cylinder	In.	4	5	6	5	6	7	8	6	7	8	10	7	8	10	12
Length of stroke	In.	24	24	24	24	24	24	24	24	24	24	24	36	36	36	36
Gallons per hour approximate		3900	6100	8800	6100	8800	12,000	15,650	8,800	12,000	15,650	24,450	12,000	15,650	24,450	35,225
Diameter Suction and Delivery	In.	3	3½	4	3½	4	5	6	4	5	6	8	5	6	8	9
Diameter High-pressure Steam Inlet	In.	1¼	1¼	1¼	1½	1½	1½	1½	2¼	2¼	2¼	2¼	2½	2½	2½	2½
Diameter Low-pressure Steam Exhaust	In.	1½	1½	1½	1¾	1¾	1¾	1¾	2½	2½	2½	2½	2½	2½	2½	2½
Height in feet water can be raised with 40 lbs. pressure per square inch in cylinder	Non-condensing	360	330	160	360	250	184	140	360	264	202	130	360	275	175	122
Ditto ditto	ditto—with Holman's Condenser	480	307	213	480	333	245	187	480	352	269	173	480	367	234	162
Ditto ditto	ditto—with Air-pump Condenser	600	384	267	600	417	306	335	600	440	337	216	600	459	203	203

CONTINUED.

Diameter of High-pressure Cylinder	In.	16	16	16	16	18	18	18	18	21	21	21	24	24	24	30	30
Ditto of Low-pressure Cylinder	In.	28	28	28	28	32	32	32	32	36	36	36	42	42	42	52	52
Ditto of Water Cylinder	In.	8	10	12	14	8	10	12	14	10	12	14	10	12	14	12	14
Length of stroke	In.	36	36	36	36	48	48	48	48	48	48	48	48	48	48	48	48
Gallons per hour approximate		15,650	24,450	35,225	47,950	13,650	24,450	35,225	47,950	24,450	35,225	47,950	24,450	35,225	47,050	35,225	47,950
Diameter Suction and Delivery	In.	6	8	9	10	6	8	9	10	8	9	10	8	9	10	9	10
Diameter High-pressure Steam Inlet	In.	2½	2½	2½	2½	3	3	3	3	3½	3½	3½	4	4	4	5½	5½
Diameter Low-pressure Steam Exhaust	In.	3	2	3	3	3½	3½	3½	3½	4	4	4	5	5	5	6½	6½
Height in feet water can be raised with 40 lbs. pressure per square inch in cylinder	Non-condensing	360	230	160	118	456	292	202	149	397	276	202	518	360	264	562	413
Ditto ditto	ditto—with Holman's Condenser	480	307	213	154	603	389	269	198	528	363	269	691	480	352	750	550
Ditto ditto	ditto—with Air-pump Condenser	600	384	267	191	750	486	337	248	660	450	337	864	600	440	937	689

PRICES GIVEN ON RECEIPT OF REQUIREMENTS.

Any number of these Engines can be placed side by side, to work in conjunction or separately as desired, thereby multiplying the work of one Pump to any extent.

NORTH OF ENGLAND HOUSE ... ... TANGYE BROTHERS AND RAKE, ST. NICHOLAS BUILDINGS, NEWCASTLE-ON-TYNE.
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HADFIELD'S STEEL FOUNDRY COMPANY,

ATTERCLIFFE, SHEFFIELD,

DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

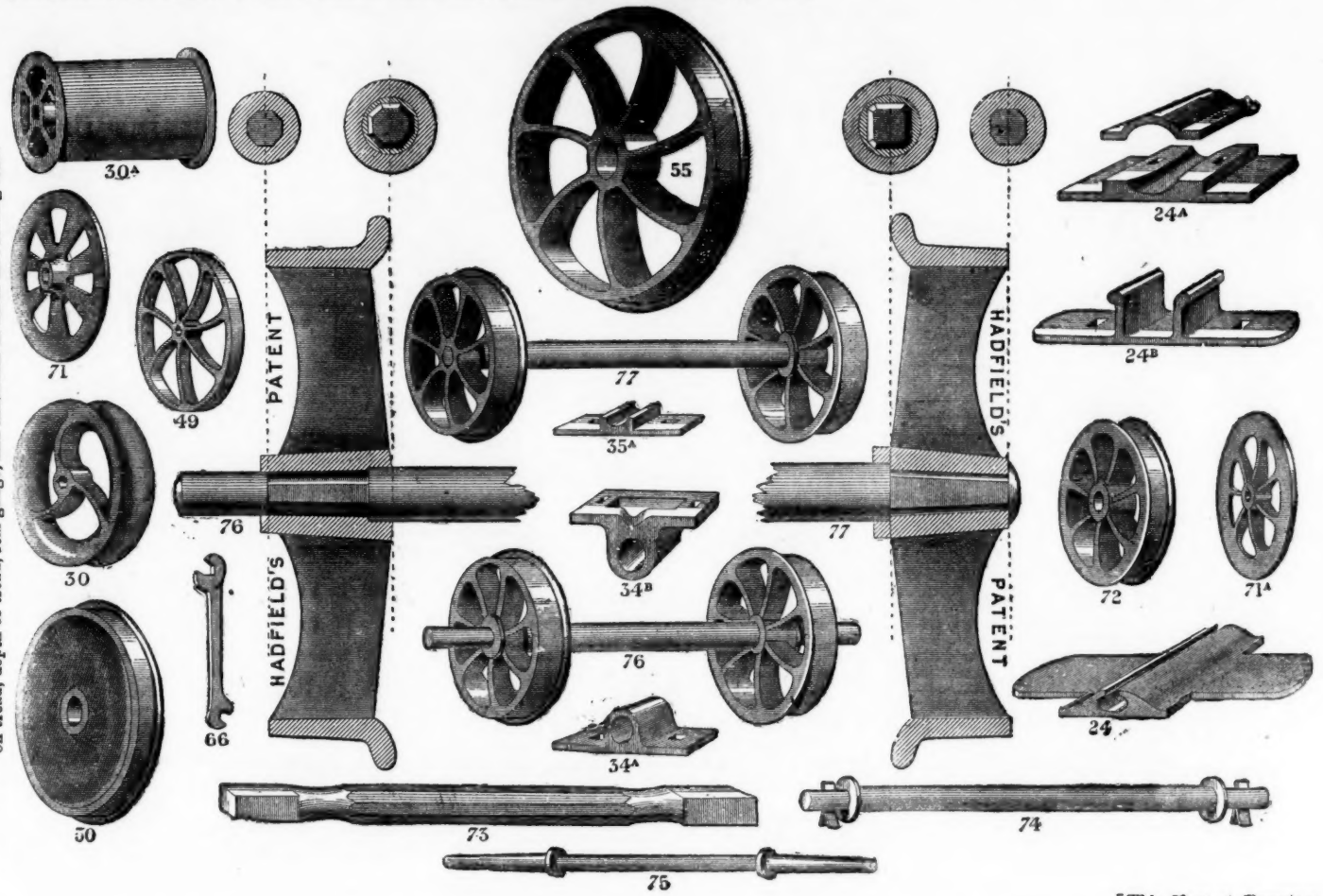
CRUCIBLE STEEL CASTINGS, for Engineering and Mining Purposes

AND ARE THE SOLE MAKERS OF

HADFIELD'S CRUCIBLE STEEL WHEELS.

One of our departments is specially adapted for the manufacture of these Wheels (as shown below), for Collieries, Ironstone Mines, Slate Quarries, Ironworks, Lead Mines, &c., &c. We have made, and are now making, many HUNDRED THOUSANDS; and having Patented a New Method of Fitting Wheels upon axles, being cheap, effective, and expeditious, we can execute orders entrusted to us with promptitude, our capacity in this department alone being equal to about 2000 wheels per week.

N.B.—Prices per Set of Wheels and Axles, fitted complete, forwarded on receipt of diameter of wheel on tread, depth of tread, real gauge, and thickness of axles and rolling load.



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HADFIELD'S PATENT METHOD OF FITTING WHEELS UPON AXLES.

The advantages of the above system are that the Wheels being forced upon a Taper Square-ended Axle, by Machinery, and then riveted (the machine securing truth), it is impossible that they can come loose or get within gauge. They are very heaply fitted on, and run exceedingly true.

We construct the Arms of wheels upon the curved principle (as shown in the drawings above), consequently the shrinkage or cooling of the Castings is not interfered with, thus securing the greatest advantages of our very strong material.

CRUCIBLE CAST-STEEL WHEELS, when cast by us, are made from one-third to one-half lighter than Cast-Iron. They cannot be broken while working, even with rough usage, and will wear at least twelve times as long as Cast-Iron, thus saving animal and steam power, and reducing wear and tear immensely.

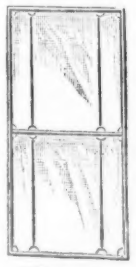
We would also draw special attention to our INCLINE PULLEYS and CAGE GUIDES, the adoption of which will prove highly advantageous.

HARRIS'S PATENT WROUGHT-IRON WINDOWS.

DOME AND OTHER ROOF LIGHTS, FLOOR AND PAVEMENT LIGHTS, ETC.

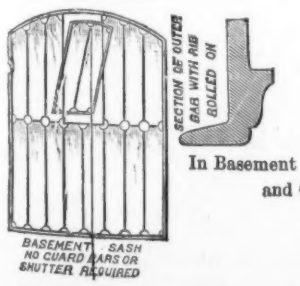
GREAT BRITAIN,
UNITED STATES OF AMERICA,

ARE STRONGER, SUPERIOR, AND CHEAPER THAN ANY OTHER METAL SASHES YET PRODUCED—COST LESS FOR GLAZING—ARE AS CHEAP IN MANY CASES AS WOOD



Private Houses,
Parsonage Houses,
Farm Houses,
Churches,
Chapels,
Schools,

ILLUSTRATED CATALOGUES ON APPLICATION.



In Basement Storeys and Exposed Positions Shutters and Guard Bars are dispensed with.

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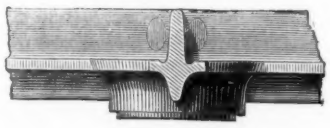
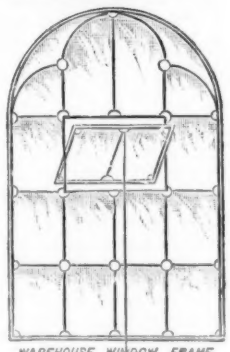
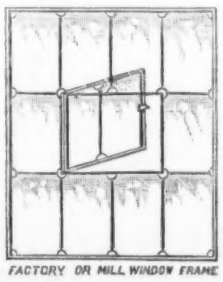
PATENTED IN







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—CAN BE DESIGNED AND MANUFACTURED TO SUIT ANY STYLE OF ARCHITECTURE OR POSITION WHERE A WINDOW MAY BE REQUIRED.

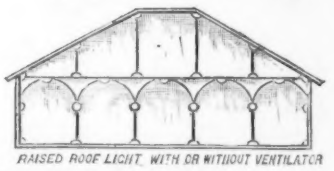
ARE BEING EXTENSIVELY USED IN—

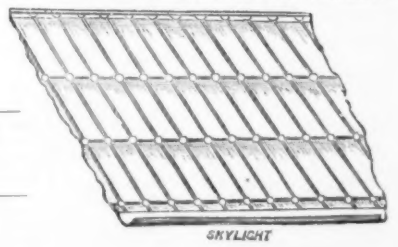
Lunatic Asylums, &c.,
Public Buildings, Banks,
Wharves, Warehouses,
Factories, Mills,
Breweries, &c.,
Engine Houses.

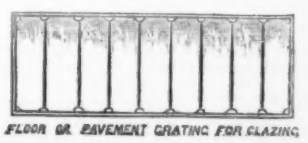
ILLUSTRATED CATALOGUES ON APPLICATION.

Security is obtained in these Skylights without Guard Bars, and with less obstruction to Light.

EXPORT.







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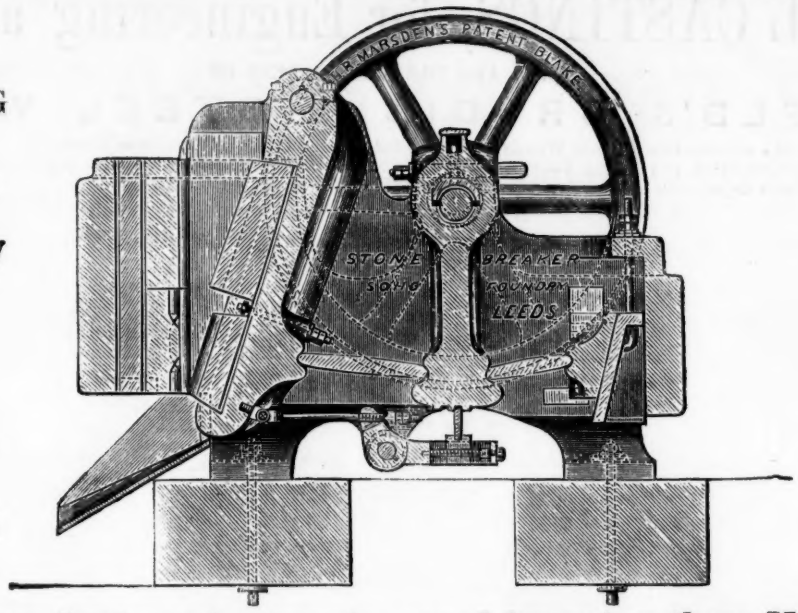

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DEAR SIR,—I have broken over 40,000 tons of very hard LIMESTONE into ROAD METAL, for the Newport and other Road Trusts, in your PATENT STONE BREAKER, AND ALL WITH ONE PAIR OF JAWS, which are STILL IN USE. I do not think at all, but am quite sure yours are the only Machines which fully perform the work you set them out to do, and there are none in the Show can at all compare with them. Yours, truly,
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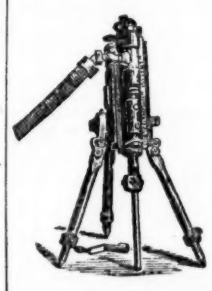

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